SONY

SYSTEM CONTROLLER

CSP-5000E

INPUT BOARD

CSPB-510VC

OUTPUT BOARD

CSPB-520VC

SYSTEM KEYBOARD

CSPK-5000E

SERVICE MANUAL

Vol. 1 (1st Edition)

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MANUAL STRUCTURE

Purpose of this manual

This manual is the Service Manual Vol.1 for the system controller CSP-5000E, the optional input board CSPB-510VC and the optional output board CSPB-520VC, and the system keyboard CSPK-5000E.
This manual contains maintenance information on this equipment, and servicing information necessary for parts replacement and adjustments.

Related Manuals

In addition to this Service Manual Vol.1, the following manuals are provided.

- **Operating Instructions (Supplied with equipment)**

  CSP-5000E
  Part No. 3-860-960-11 (English, French, German, Spanish and Italian for CE)
  CSPK-5000E
  Part No. 3-860-961-11 (English and French for CE)
  3-860-961-12 (German, Spanish and Italian for CE)
  CSPB-510VC
  Part No. 3-860-962-11 (English, French, German, Spanish and Italian for CE)
  CSPB-520VC
  Part No. 3-860-963-11 (English, French, German, Spanish and Italian for CE)

  Describe how to operate this equipment.

- **Service Manual Vol.2 (Not supplied with equipment)**

  Part No. 9-977-305-21
  Describes the board layouts, schematic diagrams, semiconductor pin assingments and parts lists.

Contents

The sections covered in the manual are summarized below to give you a general understanding of the manual.

SECTION 1 OPERATING INSTRUCTIONS

Describes the contents of the operating instructions.

SECTION 2 SERVICE OVERVIEW

Describes the replacement of the parts, the locations of the main parts and boards, notes and so on.

SECTION 3 TROUBLESHOOTING

Describes the troubleshooting.

SECTION 4 ELECTRICAL ALIGNMENT

Describes the electrical adjustment.

SECTION 5 CIRCUIT DESCRIPTION AND BLOCK DIAGRAMS

Describes circuit operation accompanied by block diagrams.

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SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from operation manual.

1-1. CSP-5000E [SYSTEM CONTROLLER]

3-860-960-11(1)

SONY

System Controller

Operating Instructions ..... 2(EN)
Before operating the unit, please read this manual thoroughly and retain it for future reference.

CSP-5000E

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English

Warning

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Voor de Klanten in Nederland

- Dit apparaat bevat een MnO_2-Li batterij voor memory back-up.
- De batterij voor memory back-up is vastgesoldeerd op de CPU-185/CT-156 printplaat BTH601/H101.
- Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat bij einde levensduur afdankt.
- Gooi de batterij niet weg, maar lever hem in als KCA.

- Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.

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Features

The CSP-5000E System Controller is a highly programmable, easy-to-use CCTV controller.
It incorporates an intelligent microprocessor-based matrix switcher, and supports up to 128 inputs and 32 outputs.
Together with cameras, monitors and the CSPK-5000E System Keyboards (not supplied), you now have an ideal medium to large-scaled surveillance system for shopping centers, banks, office buildings, railroad stations, hotels, warehouses and traffic control applications.

The CSP-5000E System Controller has the following features.

Programmability

- You can specify program sequences of up to 128 steps for each monitor.
- A sequence program can be defined to up to 32 monitors. A “tour” is defined as a set of sequence programs, and up to eight tours can be stored.
- Any desired tour can be started automatically at programmed times and days.

Alarm function

- An alarm signal can activate up to four monitors and move cameras to the preset positions swiftly.
- A log of the most recent 512 alarms is maintanied for recall and review.
- In addition to 256 alarm signals input directly to the system controller, multiplexed alarm signals can be transmitted from the connected telemetry receivers.

Highly reliable communication

- Communication between the system controller and camera receivers are carried out by the twisted pair telemetry, and the commands from the system controller are transferred by the RS-422A/485 transmission paths to the receivers.

Easy-to-read system monitor

Camera IDs can be registered in Japanese, English, French, German, Spanish, and Italian.

System partitioning (password protection)

The CSP-5000E accepts up to seven system keyboards, enabling local and remote control by multiple operators.
Furthermore, you can specify which of the cameras, monitors and setup menu items are available to each operator. Well-chosen system partitions can limit the scenes available to each operator, contributing to more efficient surveillance and enhanced system security.

Other feature

The CSP-5000E supports the line-lock synchronization commonly used in CCTV systems. The VD-S system can be used to synchronize the Sony SSC-DC14P and SSC-DC18P cameras (not supplied) by multiplexing video signals and VD pulses.

Precautions

On safety

- Operate on 220 to 240V AC.
- Do not drop or place heavy objects on the power code. If the power cord is damaged, turn off the power immediately. Using the unit with a damaged power code will result in hazard.
- Disconnect the power code from the AC outlet by pulling the plug. Never pull the code itself.
- If you spill liquid or drop an object into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.

On installation

Do not expose the unit:
- to extremety low or high temperatures. Use the unit at a temperature from 0˚C to 40˚C.
- to direct sunlight or near heat souces such as radiators or air ducts.
- to damp or dusty location.
- to strong vibration.
- to devices which genarate strong magnetic fields.
- to devices such as radios or TVs which generate strong radio frequency energy.

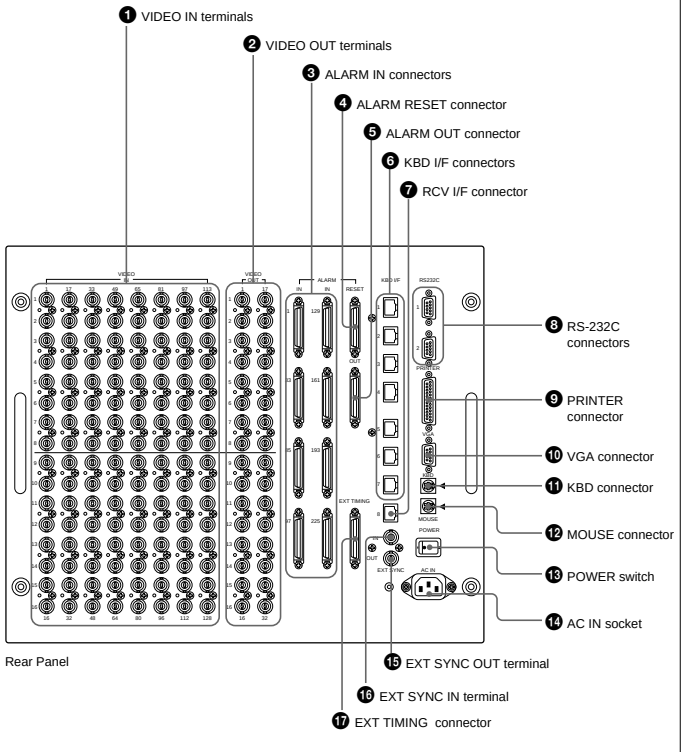
On handling

Do not drop the unit or subject it to severe shock.

On cleaning

Clean the cabinet and panel with a dry, soft cloth. Do not use solvents such as thinner, benzine, alcohol and other volatile liquids, as they may damage the finish.

Location and Function of Parts and Controls



❶ VIDEO IN terminals (1 to 128) (BNC type)
Inputs video signals.

❷ VIDEO OUT terminals (1 to 32) (BNC type)
Outputs video signals.

❸ ALARM IN connectors (pin 1 to 256)
Connects to a maximum of 256 alarm sensors. Opening the pin or short-circuiting the pin to the ground will activate the alarm. The condition (opening or short-circuiting) can be set differently for each pin.

❹ ALARM RESET connector*

❺ ALARM OUT connector (pin 1 to 32)
Outputs a signal when an alarm is activated. This connector can be connected to an external device (such as a time-lapse VTR) to activate it by an alarm signal.

❻ KBD I/F (keyboard interface) connectors (1 to 7)
Connects to the KBD I/F connector of the CSPK-5000E System Keyboard (not supplied).

❼ RCV I/F (receiver interface) connector
Connects to the RS-485/422A connector of the receiver (not supplied), or to the KBD I/F connector of the CSPK-5000E System Keyboard (not supplied).

❽ RS-232C connectors*

❾ PRINTER connector*

❿ VGA connector*

⓫ KBD (keyboard) connector*

⓬ MOUSE connector*

⓭ POWER switch
Turns on/off the power.
About 10 seconds after turning on the power, the system will boot up and a buzzer sound will be heard.

⓮ AC IN socket
Connects to a power source of 220 to 240V AC, 50Hz.

⓯ EXT SYNC OUT (external sync output) terminal
Outputs external VS signal that is input from the EXT SYNC IN terminal.
If the VS signal is not input into the system controller, this terminal outputs the internal reference signal or the line-lock reference signal, neither of which include a video signal.

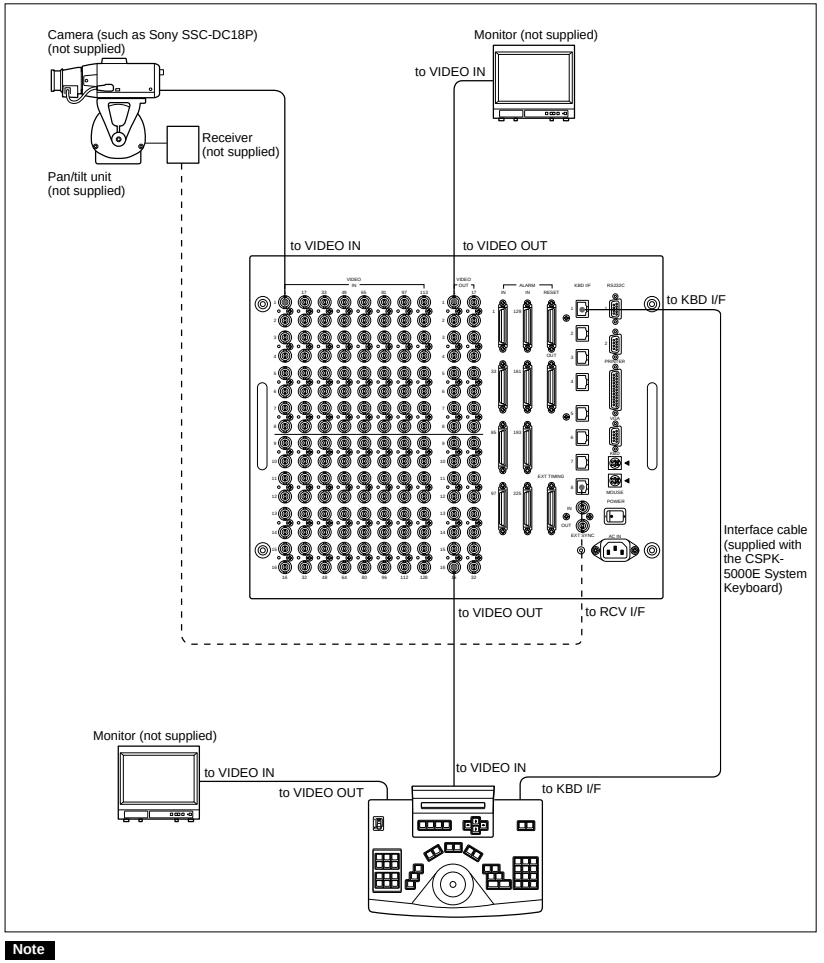
⓰ EXT SYNC IN (external sync input) terminal
Inputs external VS signal as a reference signal.

⓱ EXT TIMING (external timing) connector (pin 1 to 32)
Inputs external timing pulse to switch cameras from an external equipment. Normally connects to the time-lapse VTR.

* These connectors cannot be used.

Connections

The following diagram shows a standard system configuration.



Note

When setting up the system, be sure to establish synchronization between cameras (see page 13 (EN)).

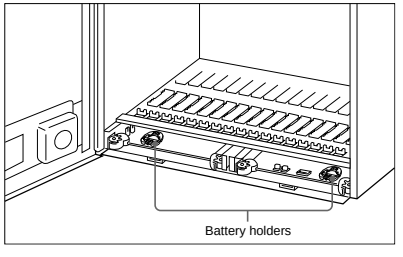
Do not use the line-lock reference signal as a synchronization signal for the VD-S lock cameras, if such cameras are used.

Preparation

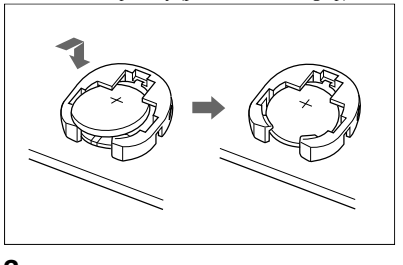
Inserting the Lithium Batteries

Insert two CR2032 lithium batteries (supplied) into the system controller.

1 Open the front panel and locate the battery holders.



2 Insert the lithium batteries into the battery holders with correct polarity (positive side facing up).



3 Close the front panel.

When the batteries become weak

The batteries last for about a year with normal operations.
When the batteries become weak, the “batt” indicator appears on the LCD screen of the System Keyboard, and the settings such as date and time will be lost. Replace the two batteries with the new Sony CR2032 lithium batteries.

Caution

Use the Sony CR2032 lithium batteries or equivalent. Use of other batteries may cause a risk of fire or explosion.

When replacing the batteries

Be sure to keep the AC power turned on.
Otherwise, data set in the System Controller may be lost.

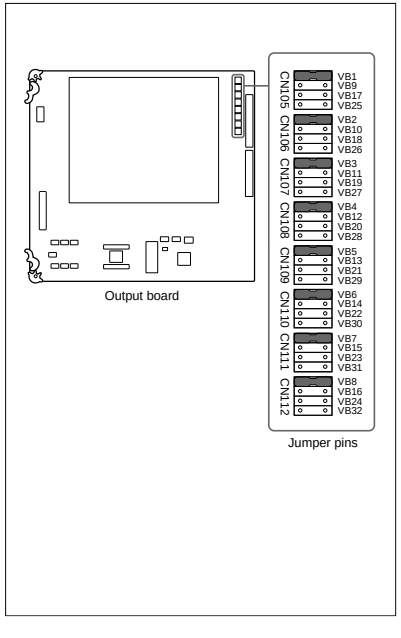
Inserting the Input Boards and Output Boards

Insert the CSPB-510VC Input Boards (not supplied) and CSPB-520VC Output Boards (not supplied) into the system controller.

An input board inputs eight video signals, and an output board outputs eight video signals.
The system controller is equipped with 16 slots for the input boards and four slots for the output boards.
Insert the required number of boards.

Setting the jumber pins on the output boards

Before inserting the output boards, set the jumper pins on the output boards as follows, in accordance with the slot number the board is to be inserted into.



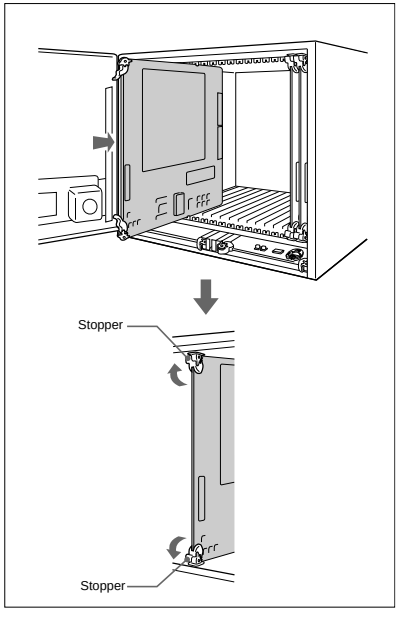
Setting the jumper pins on the output boards

Jumper pin	Slot 1	Slot 2	Slot 3	Slot 4
CN105	VB1	VB9	VB17	VB25
CN106	VB2	VB10	VB18	VB26
CN107	VB3	VB11	VB19	VB27
CN108	VB4	VB12	VB20	VB28
CN109	VB5	VB13	VB21	VB29
CN110	VB6	VB14	VB22	VB30
CN111	VB7	VB15	VB23	VB31
CN112	VB8	VB16	VB24	VB32

Inserting the boards

Caution

Do not insert and remove the boards while the power is turned on.



1 Open the front panel.

2 Insert the input boards into one of the 16 slots (slot 1 to 16) of the right side, and insert the output boards into one of the four slots (slot 1 to 4) of the left side.

3 Secure the board using the stopper.

4 Close the front panel.

Video input/output numbers

The video input and output numbers of the terminals on the input/output boards are determined by the slot you inserted the boards.

Video input number	Slot number
1 - 8	1
9 - 16	2
17 - 24	3
25 - 32	4
33 - 40	5
41 - 48	6
49 - 56	7
57 - 64	8
65 - 72	9
73 - 80	10
81 - 88	11
89 - 96	12
97 - 104	13
105 - 112	14
113 - 120	15
121 - 128	16

Video output number	Slot number
1 - 8	1
9 - 16	2
17 - 24	3
25 - 32	4

Operation

Proceed as follows to operate the System Controller.

1 Make necessary connections.
See page 8(EN).

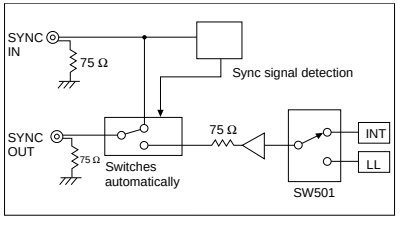
2 Turn on the POWER switch.
- After about ten seconds, the system will boot up and you will hear a buzzer sound.
- All monitors display the scene from the camera connected to the VIDEO IN 1 terminal (as the default setting).
- The date and time, the monitor number and the camera number are displayed (as the default setting).

Use the CSPK-5000E System Keyboard (not supplied) to configure the system, program surveillance, and make other settings.

Technical Information

Reference Signal

The following diagram shows the reference signal block.



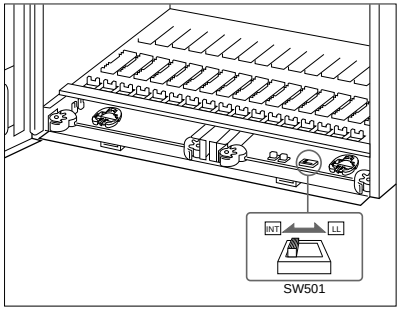
When VS singal is input from the SYNC IN terminal

The signal input from the SYNC IN terminal is output to the SYNC OUT terminal.

When no signal is input from the SYNC IN terminal

The internal reference signal or the line-lock reference signal is output from the SYNC OUT terminal.

Use the slide switch SW501 inside the front panel to determine the type of the signal to be output from the SYNC OUT terminal.



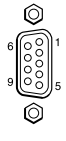
Set the SW501 as follows:
INT : to output the internal reference signal
LL : to output the line-lock reference signal
Factory preset position is “INT.”

Connector Pin Assignment

KBD I/F connector (RJ-45, 8-pin)

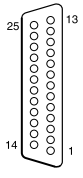
Pin No.	Signal
1	–
2	–
3	RXD–
4	RXD+
5	TXD–
6	TXD+
7	–
8	–

RS-232C connector (D-sub 9-pin)



Pin No.	Input/Output	Signal
1	Input	Data Carrier Detect
2	Input	Receive Data
3	Output	Transmit Data
4	Output	Data Terminal Ready
5	–	GND
6	Input	Data Set Ready
7	Output	Request To Send
8	Input	Clear To Send
9	Input	Ring Indicate

PRINTER connector (D-sub 25-pin)



Pin No.	Input/Output	Signal
1	Input/Output	–STROBE
2	Input/Output	Data0
3	Input/Output	Data1
4	Input/Output	Data2
5	Input/Output	Data3
6	Input/Output	Data4
7	Input/Output	Data5
8	Input/Output	Data6
9	Input/Output	Data7
10	Input	–ACK
11	Input	BUSY
12	Input	PE
13	Input	SLCT
14	Output	–AFD
15	Input	–ERROR
16	Output	–INIT
17	Output	–SLIN
18 - 25	–	GND

VGA connector (HD-sub 15-pin)

Pin No.	Signal
1	R
2	G
3	B
4 - 8	GND
9	–
10 - 11	GND
12	–
13	HSYNC
14	VSYNC
15	–

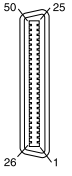
KBD connector (mini DIN 6-pin)

Pin No.	Signal
1	Data
2	–
3	GND
4	+5V
5	CLK
6	–

MOUSE connector (mini-DIN 6-pin)

Pin No.	Signal
1	Data
2	–
3	GND
4	+5V
5	CLK
6	–

ALARM IN connector



Pin No.	Signal	Signal	Pin No.
50	ALARM IN 32	ALARM IN 16	25
49	ALARM IN 31	ALARM IN 15	24
48	ALARM IN 30	ALARM IN 14	23
47	ALARM IN 29	ALARM IN 13	22
46	ALARM IN 28	ALARM IN 12	21
45	ALARM IN 27	ALARM IN 11	20
44	ALARM IN 26	ALARM IN 10	19
43	ALARM IN 25	ALARM IN 9	18
42	ALARM IN 24	ALARM IN 8	17
41	ALARM IN 23	ALARM IN 7	16
40	ALARM IN 22	ALARM IN 6	15
39	ALARM IN 21	ALARM IN 5	14
38	ALARM IN 20	ALARM IN 4	13
37	ALARM IN 19	ALARM IN 3	12
36	ALARM IN 18	ALARM IN 2	11
35	ALARM IN 17	ALARM IN 1	10
34 - 26	GND	GND	9 - 1

Alarm input numbers

The system controller is equipped with eight ALARM IN connectors (connector 1 to 8). The above table shows the pin assignment of the ALARM IN connector 1.

The alarm input numbers of the eight ALARM IN connectors are as follows.

Connector No.	Alarm input numbers
1	ALARM IN 1 - ALARM IN 32
33	ALARM IN 33 - ALARM IN 64
65	ALARM IN 65 - ALARM IN 96
97	ALARM IN 97 - ALARM IN 128
129	ALARM IN 129 - ALARM IN 160
161	ALARM IN 161 - ALARM IN 192
193	ALARM IN 193 - ALARM IN 224
225	ALARM IN 225 - ALARM IN 256

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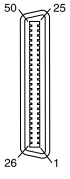
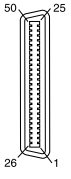
Technical Information

ALARM OUT connector



Pin No.	Signal	Signal	Pin No.
50	ALARM OUT 32	ALARM OUT 16	25
49	ALARM OUT 31	ALARM OUT 15	24
48	ALARM OUT 30	ALARM OUT 14	23
47	ALARM OUT 29	ALARM OUT 13	22
46	ALARM OUT 28	ALARM OUT 12	21
45	ALARM OUT 27	ALARM OUT 11	20
44	ALARM OUT 26	ALARM OUT 10	19
43	ALARM OUT 25	ALARM OUT 9	18
42	ALARM OUT 24	ALARM OUT 8	17
41	ALARM OUT 23	ALARM OUT 7	16
40	ALARM OUT 22	ALARM OUT 6	15
39	ALARM OUT 21	ALARM OUT 5	14
38	ALARM OUT 20	ALARM OUT 4	13
37	ALARM OUT 19	ALARM OUT 3	12
36	ALARM OUT 18	ALARM OUT 2	11
35	ALARM OUT 17	ALARM OUT 1	10
34 - 26	GND	GND	9 - 1

EXT TIMING connector



Pin No.	Signal	Signal	Pin No.
50	EXT TIMING 32	EXT TIMING 16	25
49	EXT TIMING 31	EXT TIMING 15	24
48	EXT TIMING 30	EXT TIMING 14	23
47	EXT TIMING 29	EXT TIMING 13	22
46	EXT TIMING 28	EXT TIMING 12	21
45	EXT TIMING 27	EXT TIMING 11	20
44	EXT TIMING 26	EXT TIMING 10	19
43	EXT TIMING 25	EXT TIMING 9	18
42	EXT TIMING 24	EXT TIMING 8	17
41	EXT TIMING 23	EXT TIMING 7	16
40	EXT TIMING 22	EXT TIMING 6	15
39	EXT TIMING 21	EXT TIMING 5	14
38	EXT TIMING 20	EXT TIMING 4	13
37	EXT TIMING 19	EXT TIMING 3	12
36	EXT TIMING 18	EXT TIMING 2	11
35	EXT TIMING 17	EXT TIMING 1	10
34 - 26	GND	GND	9 - 1

Specifications

Video signal system
PAL/CCIR standard
Inputs VIDEO INPUT connectors (BNC) (128)
1Vp-p/75 ohms composite video
Outputs VIDEO OUTPUT connectors (BNC) (32)
1Vp-p/75 ohms composite video
Reference input/output
SYNC IN connector (BNC)
1Vp-p/75 ohms composite video
SYNC OUT connector (BNC)
0.3Vp-p/75 ohms composite sync
Keyboard interface
KBD I/F connector (RJ-45, 8-pin)
RS-422A (7)
RCV I/F connector (RJ-45, 8-pin)
RS-422A/485 (No.8 only)
External timing inputs
EXT TIMING connector (1)
32 inputs, MAKE contact
Alarm inputs ALARM IN connectors (8)
256 inputs, MAKE contact
Alarm outputs ALARM OUT connector (1)
32 outputs, open collector 16V 100mA max.
Sequence steps 128 steps per monitor
Switching dwell time
1 to 30 seconds, external trigger
Tour sequence 8
Time event 8 steps per day
Event program 8 types (day of week, calendar date)
Alarm activation Available for up to 4 monitors
Alarm duration 1 to 120 seconds
Camara IDs Up to 12 alphabetical characters
Timer accuracy ±30 seconds/month (under normal temperature)
Power requirements
220 to 240V AC, 50Hz
Power consumption
Less than 300W (fully configured)
Operating temperature
0˚C to 40˚C
Storage temperature
–20˚C to +60˚C
Dimensions 424 x 354 x 495 mm (w/h/d) (excluding projecting parts)
Mass Approx. 32.5 kg (fully configured)

Supplied accessories
Rack mounting brackets (for EIA-standard racks) (attached) (2)
AC power cord (1)
Lithium battery CR2032 (2)
Operating Instructions

Design and specifications are subject to change without notice.

SONY

3-860-962-**11(1)**

Input Board

Operating Instructions ..... Page 2
Before operating the unit, please read this manual thoroughly and retain it for future reference.

CSPB-510VC

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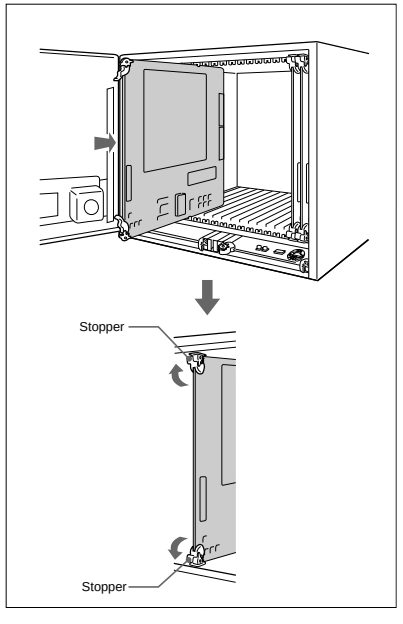
English

Inserting the Input Boards

Caution

Do not insert and remove the boards while the power of the system controller is turned on.



1 Open the front panel.

2 Insert the input boards into one of the 16 slots (slot 1 to 16) of the right side.

3 Secure the board using the stopper.

4 Close the front panel.

Video Input numbers

The video input numbers of the terminals on the input boards are determined by the slot you inserted the boards.

Video input number	Slot number
1 - 8	1
9 - 16	2
17 - 24	3
25 - 32	4
33 - 40	5
41 - 48	6
49 - 56	7
57 - 64	8
65 - 72	9
73 - 80	10
81 - 88	11
89 - 96	12
97 - 104	13
105 - 112	14
113 - 120	15
121 - 128	16

SONY

3-860-963-**11(1)**

Output Board

Operating Instructions ..... Page 2
Before operating the unit, please read this manual thoroughly and retain it for future reference.

CSPB-520VC

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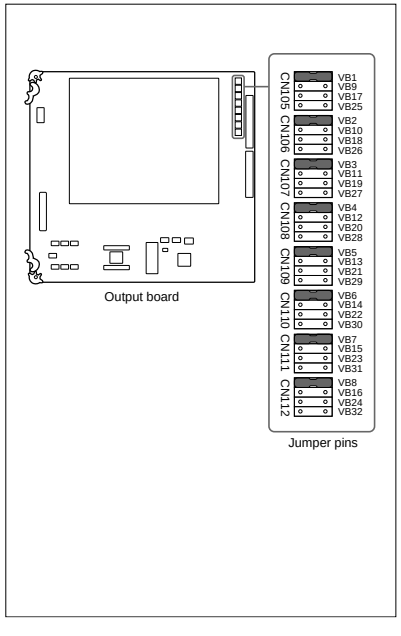
English

Inserting the Output Boards

Setting the Jumber Pins on the Output Boards

Before inserting the output boards, set the jumper pins on the output boards as follows, in accordance with the slot number the board is to be inserted into.


CN105 VB1 VB9 VB17 VB25
CN106 VB2 VB10 VB18 VB26
CN107 VB3 VB11 VB19 VB27
CN108 VB4 VB12 VB20 VB28
CN109 VB5 VB13 VB21 VB29
CN110 VB6 VB14 VB22 VB30
CN111 VB7 VB15 VB23 VB31
CN112 VB8 VB16 VB24 VB32
Output board
Jumper pins

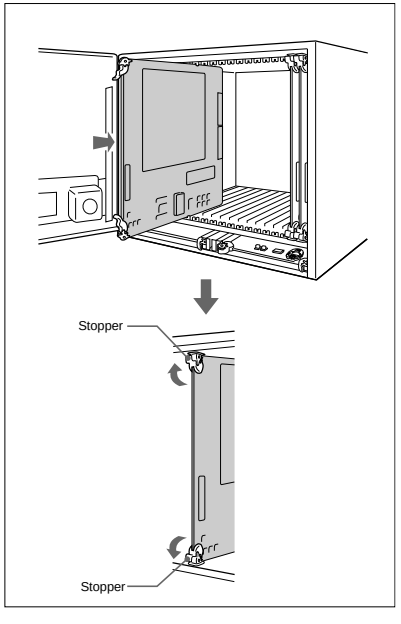
Setting the jumper pins on the output boards

Jumper pin	Slot 1	Slot 2	Slot 3	Slot 4
CN105	VB1	VB9	VB17	VB25
CN106	VB2	VB10	VB18	VB26
CN107	VB3	VB11	VB19	VB27
CN108	VB4	VB12	VB20	VB28
CN109	VB5	VB13	VB21	VB29
CN110	VB6	VB14	VB22	VB30
CN111	VB7	VB15	VB23	VB31
CN112	VB8	VB16	VB24	VB32

Inserting the Boards

Caution

Do not insert and remove the boards while the power is turned on.



1 Open the front panel.

2 Insert the output boards into one of the four slots (slot 1 to 4) of the left side.

3 Secure the board using the stopper.

4 Close the front panel.

Video Output Numbers

The video output numbers of the terminals on the output boards are determined by the slot you inserted the boards.

Video output number	Slot number
1 - 8	1
9 - 16	2
17 - 24	3
25 - 32	4

SONY

3-860-961-**11(1)**

System Keyboard

Operating Instructions ..... 2(EN)
Before operating the unit, please read this manual thoroughly and retain it for future reference.

CSPK-5000E

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English

Warning

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

• The receiver mentioned in this manual is one of the followings:
Twisted pair type receiver: Receiver controlled by the communication protocol of Videmech Limited.
Multiplex type receiver: Coaxitron™ receiver/Intercept™ receiver of Pelco.
• Coaxitron™ and Intercept™ are registered trademarks of Pelco.

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Assigning PTZ priority ..... 42(EN)
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Limiting access to the cameras ..... 43(EN)
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Features

The CSPK-5000E System Keyboard is the primary input device for programming and operating the CSP-5000E System Controller. It comes with the following features:

- You can switch any camera to any monitor manually.
- Control can be done with just one hand. The joyball responds to pressure from the palm of the hand for intuitive control of the variable-speed motors in pan/tilt units, while the keys offer simultaneous control of lens functions (zoom, focus and iris).
- Camera site control features include camera power on/off, wiper on/off and AUX keys.
- You can set up the system configuration (date & time, keyboard monitor, etc.).
- You can also configure the input signal (identification, cable compensation, receiver type, VD synchronization, etc.)
- Surveillance can be programmed with use of sequence, tour, event, and group.
- Alarms can be set up and logged for later viewing.
- You can use system partitioning to specify which of the cameras, monitors and setup menu items are available to each operator. Well-chosen system partitions can limit the scenes available to each operator, contributing to more efficient surveillance and enhanced system security.

Precautions

On safety

- Operate on 220 to 240V AC.
- Do not drop or place heavy objects on the power cord. If the power cord is damaged, turn off the power immediately. Using the unit with a damaged power cord will result in hazard.
- Disconnect the power cord from the AC outlet by pulling on the plug. Never pull the cord itself.
- If you spill liquid or drop flammable or metal objects into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.

On installation

Do not expose the unit:

- to extremety low or high temperatures. Use the unit at a temperature from 0˚C to 40˚C.
- to direct sunlight or near heat sources such as radiators or air ducts.
- to damp or dusty location.
- to strong vibration.
- to devices which genarate strong magnetic fields.
- to devices such as radios or TVs which generate strong radio frequency energy.

On handling

Do not drop the unit or subject it to severe shock.

On cleaning

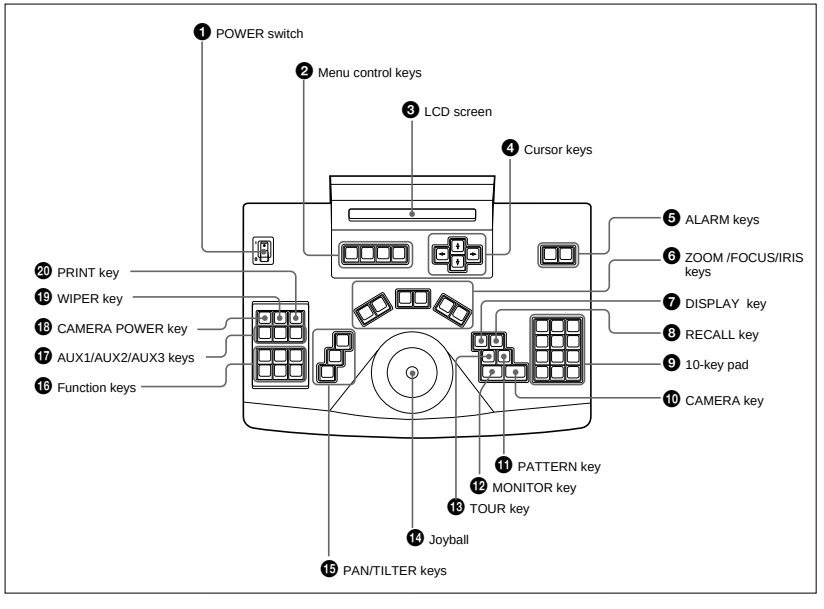
Clean the cabinet and panel with a dry, soft cloth. Do not use solvents such as thinner, benzine, alcohol and other volatile liquids, as they may damage the finish.

On transportation

Protect the keyboard from impact by transporting it in its original carton or protective case.

Location and Function of Parts and Controls

Top Panel



❶ POWER switch (page 10(EN))
Press this key to turn on/off the keyboard.

❷ Menu control keys (page 16(EN))
MENU : Press to display the main menu on the keyboard monitor.
PREVIOUS : Press to see the previous page on the screen.
NEXT : Press to see the next page on the screen.
SET : Press this key to accept changes to settings.

❸ LCD screen
Displays the current camera, monitor, tour, input number, etc.

❹ Cursor keys (page 16(EN))
Use these keys to move the on-screen cursor around.

❺ ALARM keys (page 15(EN))
BUZZER : While the lamp of this button lights up, the buzzer sound will be heard when an alarm signal is input to the System Controller.
To deactivate the buzzer, press this key so that the lamp goes off.
RESET: When an alarm signal is input, the lamp of this button lights up. Press to reset an alarm.

❻ ZOOM /FOCUS/IRIS keys (page 14(EN))
Press these keys to control lens functions of a selected camera equipped with motorized zoom lens: zoom (wide or tele), focus (near or far) and iris (open or close).

❼ DISPLAY key (page 14(EN))
Press this key to turn on/off display of current date, etc. on the currently selected monitor.

❽ RECALL key (page 12(EN))
Press this key to restart the sequence program once suspended.

❾ 10-key pad
Use it to enter a number.

❿ CAMERA key (page 11(EN))
Press this key to switch to a specified camera.

⓫ PATTERN key (page 41(EN))
Press this key to recall defined pan/tilt movement.

⓬ MONITOR key (page 11(EN))
Press this key to switch to a specified monitor.

⓭ TOUR key (page 13(EN))
Press this key to start a specified tour program.
To suspend/restart the tour program, press this key without specifying any tour number.

⓮ Joyball
Press the joyball to the desired direction to move the pan/tilt unit.
Depending on the type of the pan/tilt unit, you can control the speed by changing the pressure with the palm of your hand.

⓯ PAN-TILTER keys (page 14(EN))
AUTO : Press to move the pan/tilt unit automatically.
PRESET : Press to move pan/tilt unit and lens of the selected camera to a preset position.
HOME : Press to move the pan/tilt unit and the lens of the camera back to the home position.

⓰ Function keys
Reserved.

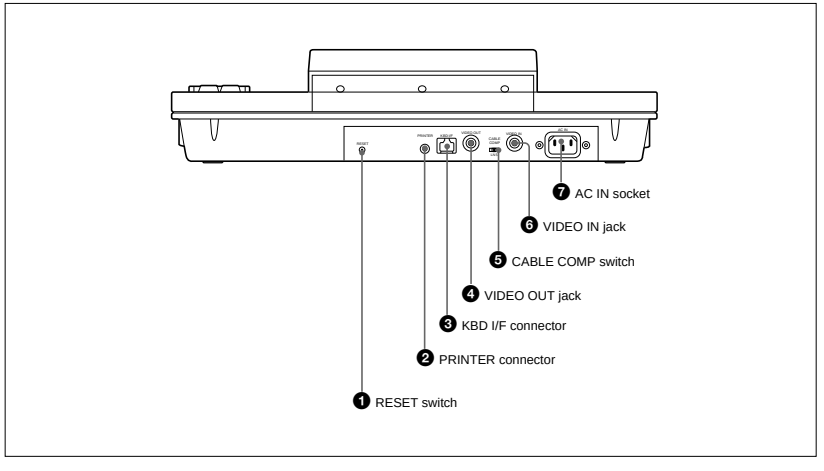
⓱ AUX1/AUX2/AUX3 (auxiliary 1/2/3) keys
Press these keys to turn on/off the auxiliary devices.

⓲ CAMERA POWER key (page 14(EN))
Press this key to turn on/off the camera's power.

⓳ WIPER key
Press this key to turn on/off the wiper.

⓴ PRINT key
Press to start printing on the video printer connected to the PRINTER connector.

Connectors



❶ RESET switch
Not usable in the current version.
Do not press this switch.

❷ PRINTER connector (mini jack)
Connect to a printer.

❸ KBD I/F (keyboard interface) connector (modular jack)
Connect to the CSP-5000E System Controller's KBD I/F connector.

❹ VIDEO OUT jack (BNC type)
Connect to a monitor.

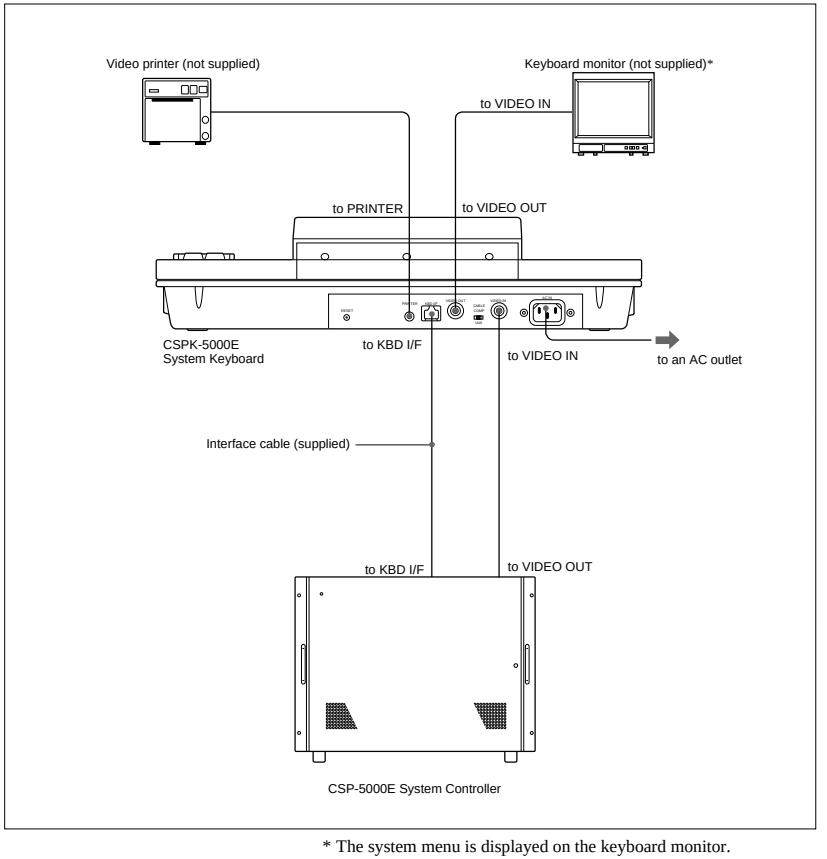
❺ CABLE COMP (cable compensation) switch
Use this switch to set the compensation for signal loss in cable connection to the CSP-5000E System Controller, according to cable type and length as indicated in the following table.

	S	M	L
3C-2V	up to 100m	up to 200m	up to 300m
5C-2V	up to 160m	up to 330m	up to 500m
7C-2V	up to 200m	up to 400m	up to 600m

❻ VIDEO IN jack (BNC type)
Connect to one of the VIDEO OUT connectors of the CSP-5000E System Controller.

❼ AC IN socket
Connect to an AC power source with the AC power cord.

Connections

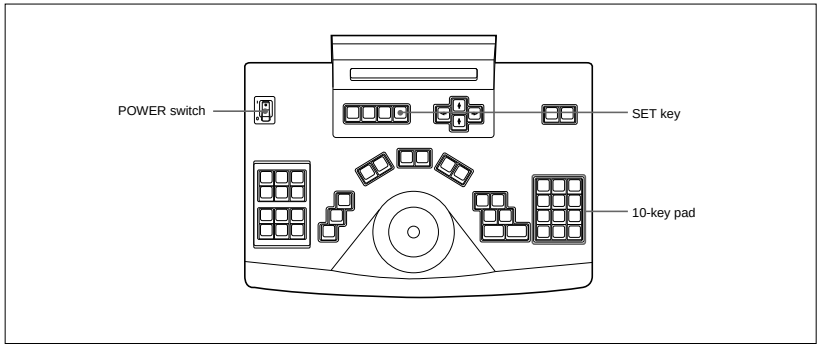


* The system menu is displayed on the keyboard monitor.
Be sure to connect the keyboard monitor to make necessary settings using the system menu.

http://getMANUAL.com

Daily Operations

Turning on the Keyboard



1 Make sure the keyboard is connected to the CSP-5000E System Controller and the keyboard monitor, and is plugged into an AC outlet.

2 Press the POWER switch.
The LCD screen displays the following welcoming message (up to about ten seconds):

```
WELCOME TO SONY SECURITY SYSTEM
JUST A MOMENT,PLEASE
```

3 If a password has been set, the following message appears:
(If no password has been set, the message shown at step 4 below appears.)

```
LOGON USER ID  >> ■■■■
      PASSWORD >> ■■■■
```

4 Enter your user ID and your password, using the 10-key pad.
If the entries are correct, the following message appears:

```
MONITOR X   CAMERA X
TOUR X                  INPUT   X
```

Otherwise, you will be prompted to enter the user ID and password again.

Reading the LCD screen

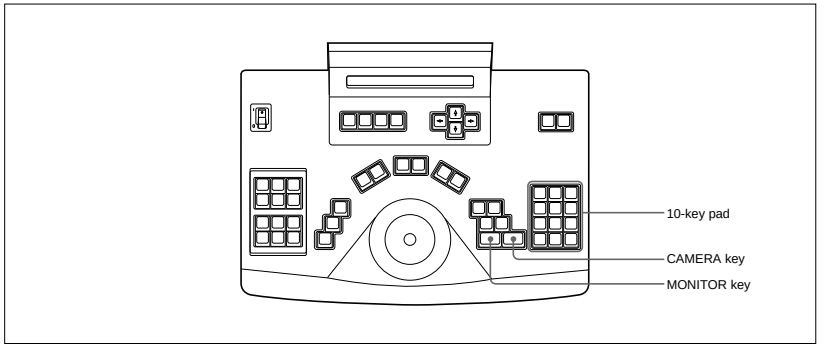
```
MONITOR  1   CAMERA   1          menu
TOUR 1                 INPUT   1 batt
```

MONITOR	Indicates the currently selected monitor. When the keyboard starts up, it indicates the monitor set in the “KEYBOARD MONITOR” menu.
CAMERA	Indicates the currently selected camera or the sequential camera number. If the external timing mode is active, the message “TLV” appears instead.
TOUR	Indicates the current tour program.
INPUT	For you to type a number
menu	Appears when the system menu mode is entered.
busy	Appears, instead of “menu,” if another keyboard user is accessing the system menu.
batt	Appears when the internal lithium battery in the CSP-5000E System Controller is running low. When this occurs, you need to replace the battery.

Adjusting the contrast of the LCD screen

While pressing down the SET key, press the ↑↓ cursor keys to adjust the contrast of the LCD screen.
When the power is turned off and turned on again, the contrast returns to the default value.

Manually Switching Cameras and Monitors



If you have programmed tours and events, surveillance activates as soon as the system starts everyday. However, you can also temporarily interrupt the program and manually control the surveillance by selecting a camera to capture scene onto a specified monitor, as described in the following steps.

Selecting a monitor

Example: Select monitor 4.

1 Enter the number “4” with the 10-key pad.

```
MONITOR   CAMERA X
TOUR X                  INPUT 4
```

2 Press the MONITOR key.
You can now further select a camera for viewing on this monitor.

```
MONITOR 4   CAMERA X
TOUR X                  INPUT
```

Selecting a camera

Example: Select camera 2 for viewing on the current monitor (4).

1 Enter the number “2” with the 10-key pad.

```
MONITOR 4   CAMERA X
TOUR X                  INPUT 2
```

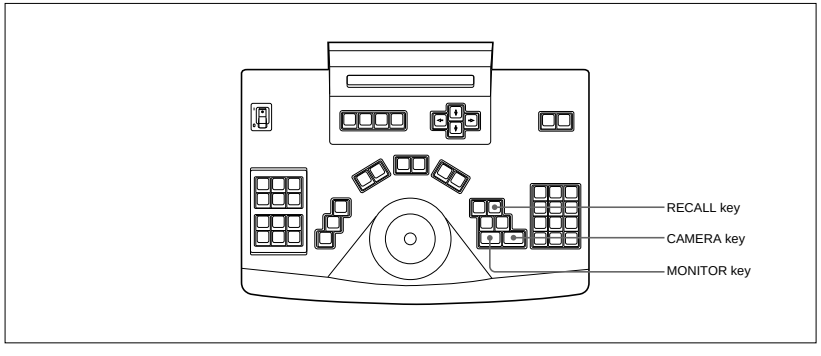
2 Press the CAMERA key.
Now you can capture scene using camera 2 for viewing on monitor 4.

```
MONITOR 4   CAMERA 2
TOUR X                  INPUT
```

Notes

- After entering a number, you can press the “*” (asterisk) key to clear the number and try again.
- If “TLV” appears in the CAMERA field, that means the external timing mode is active and you cannot change the camera number. If “AL” (alarm) appears, you cannot change the camera number on this monitor either.

Suspending a Sequence Program



While a tour is running, you can suspend any of its sequences. (See “What is a sequence?” on page 19(EN) for explanation of sequences.)

For example, the following steps interrupt the sequence program on monitor 4 and then use the monitor to view camera site 1.

1 Enter the number “4”, then press the MONITOR key.

```
MONITOR 4   CAMERA X
TOUR X                INPUT
```

2 Enter the number 1, then press the CAMERA key.

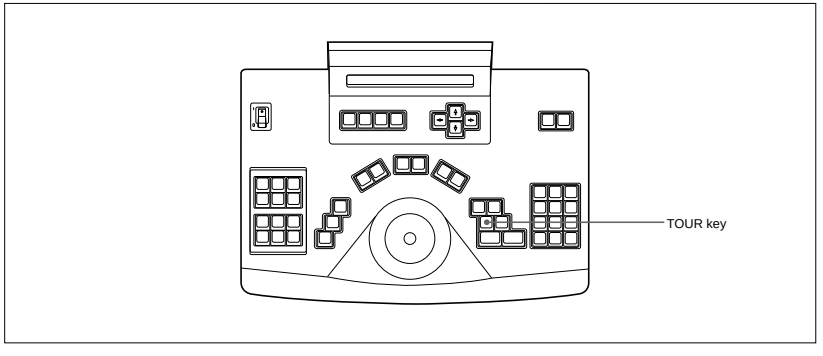
```
MONITOR 4   CAMERA 1
TOUR X                INPUT
```

Restarting the sequence program

Press the RECALL key to restart the sequence program interrupted on a certain monitor.
The sequence program for the monitor will resume from where it was interrupted.

If, however, the dwell time is synchronized (page 26(EN)), the sequence displayed on the monitor will be the master sequence.

Manually Starting a Tour Program



When particular needs arise, you can also temporarily interrupt the routine surveillance program and manually select a tour program to run, as described in the following steps. (See “What is a tour?” on page 20(EN) for explanation of a tour.)

Example: Run tour program 3

1 Enter the number “3” with the 10-key pad.

```
MONITOR X   CAMERA X
TOUR X              INPUT 3
```

2 Press the TOUR key to start running the selected tour.

```
MONITOR X   CAMERA X
TOUR 3              INPUT
```

Note

See the “Programming a Weekly Schedule,” on page 27(EN) and “Programming a Daily Schedule,” on page 28(EN) for details on running tours automatically.

Suspending a tour program

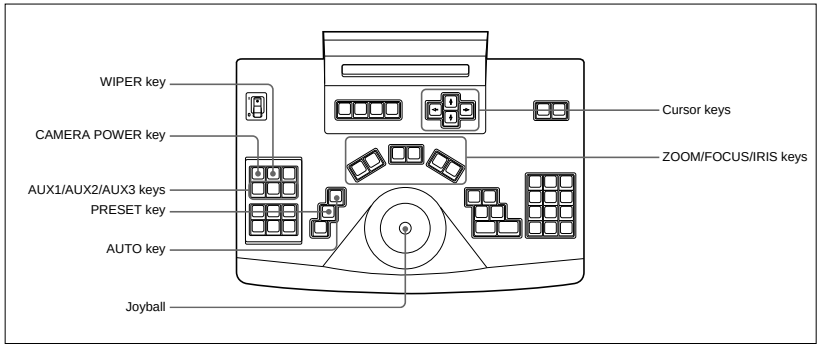
Press the TOUR key without entering any number.
“HALT” is displayed on the LCD screen.

```
MONITOR 1   CAMERA X
TOUR 3  HALT          INPUT
```

Restarting the tour program/starting another tour program

Press the TOUR key again.
Or input another tour number and press the TOUR key.
The “HALT” indication disappears.

Manually Controlling a Camera Site



In addition to manually switching cameras and monitors (see previous section), you can even manually control a camera site if the required receiver and pan/tilt unit (not supplied) are installed.

1 Enter a number to select a desired camera (site).

```
MONITOR X   CAMERA X
TOUR X                INPUT X
```

2 Then use the keys below to control the camera site.

To move the pan/tilt unit manually
Press the joyball to the desired direction. Depending on the type of the pan/tilt unit, you can increase the speed by pressing the joyball harder.

To move the pan/tilt unit automatically
If the receiver being used supports this feature, press the AUTO key. Pressing the AUTO key switches from the normal mode to the random scan mode. Pressing the AUTO key repeatedly guides you between the random scan mode and the auto scan mode. While the system is in the auto scan mode or in the random scan mode, pressing the joyball switches the system to the normal mode.

To recall a preset camera position
Enter the preset number and then press the PRESET key. Preset functions available are: pan, tilt, zoom, focus and iris. However, the number of preset positions depends on the Receiver and the pan/tilt unit of the camera.

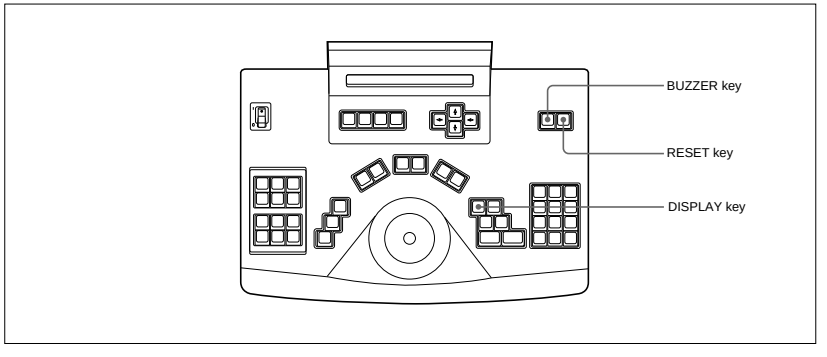
To control the lens
Press the ZOOM (WIDE/TELE), FOCUS (NEAR/FAR), or IRIS (CLOSE/OPEN) keys.

To control the camera's power
Press the CAMERA POWER key. Pressing the key again turns off the power.

To control the window wiper
Press the WIPER key.

To control the auxiliary devices
Press the AUX1, AUX2, or AUX3 key as desired.

Using the Alarm Function/Controlling Character Display on the Monitor



First configure the alarm to use the alarm function. See page 36(EN) for details.

To activate/deactivate the buzzer
To activate the buzzer, press the BUZZER key so that its lamp turns on. In this state, the buzzer sound will be heard when an alarm signal is input to the CSP-5000E System Controller.

To turn off the buzzer
While the buzzer sound is being heard, press the BUZZER key to turn it off.

To reset the alarm
Press the RESET key.

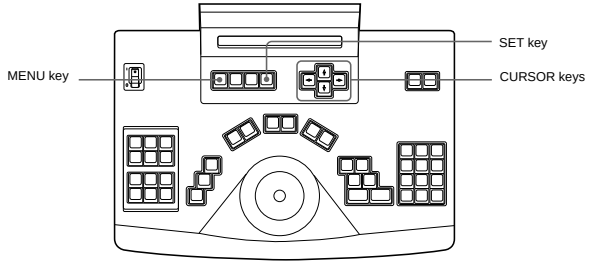
To view a log of recent alarms
See "Viewing Alarm Log," on page 38(EN).

Controlling character display on the monitor

To display status information on the currently selected monitor
Press the DISPLAY key. Pressing the key again hides the status information.

To change the location of the status information on the currently selected monitor
The status information on the monitor is separated into two portions: one includes the current date and time, and the other includes the monitor number, the camera number and the camera ID.
Use the cursor left/right keys to select the portion which you want to change the location of, then use the cursor up/down keys to change the location.

About the System Menus



Displaying the Main Menu

The system menus allow you to program surveillance, register users, and control other system tasks. They are accesible through the main menu. Press the MENU key for more than two seconds to display the main menu.

```
                MENU

→     INPUT CONFIGURE
      SYSTEM CONFIGURE
      SWITCHING PROGRAM
      ALARM
      P/T
      MULTI PICTURE
      PASSWORD
      LOGOFF
```

From the main menu, select a system menu using the ↑↓ cursor keys, then press the SET key to open the selected system menu.

When in a menu, use the ↑↓ cursor keys to select a setting, then the →← cursor keys to select options for that setting.

For details on each of the system menus, see the sections that follows.

Below is a summary of the system menus and sub-menus.

INPUT CONFIGURE menu

This menu allows you to set up cameras, cable, receiver, etc. It contains the following sub-menus.

SOURCE ID
This menu lets you give a name, up to 12 characters long, to each camera. The name can be in one of the six languages available: Japanese, English, French, German, Spanish and Italian.

CABLE COMPENSATION
Use this menu to select a cable compensation mode according to the length of each camera's cable. Five modes are available to accommodate cable length up to 1200 meters.

RECEIVER TYPE
Use this menu to specify the receiver type of each camera. Four types are available: NONE, STANDARD, STANDARD (PP), MULTIPLE, and TWIST PAIR.

VD
Use the "VD" setting to enable synchronization for Sony VD-S lock camera.

P/T LIMIT
Use this menu to limit the pan/tilt unit movement in horizontal and vertical directions.

SYSTEM CONFIGURE menu

This menu allows you to set the date & time, register keyboard monitors, and specify a language for use in naming cameras. It contains the following sub-menus.

DATE & TIME
Use this menu to set the system date and time. You can also choose among three display formats.

KEYBOARD MONITOR
Use this menu to register the CSP-5000E System Controller's KBD I/F connector number and the VIDEO OUT terminal number to which the System Keyborad is connected.

LANGUAGE
Six languages are available for you to choose: Japanese, English, French, German, Spanish and Italian. Once chosen, the language will be available for you to use to name cameras in the SOURCE ID menu.

SWITCHING PROGRAM menu

This menu allows you to program surveillance. It contains the following sub-menus.

SEQUENCE
Use this menu to program the surveillance sequence of cameras on each monitor. For each camera you can set the dwell time and the preset position. The sequences, up to 32, are further grouped into a tour. A maximum of 8 tours can be programmed.

GROUP
You can also organize some sequences into a group so that the steps in the sequences can synchronize with each other. A maximum of 8 groups can be programmed.

EVENT
Use this menu to set up events to automatically start up the tours.

ALARM menu

This menu allows you to set up the alarm conditions so that when an alarm is activated, the scene will be shown on a designated monitor via a designated camera. (Alarms can come in through the CSP-5000E System Controller or the Videmech receiver.) It contains the following sub-menus.

INPUT POLARITY
Use this menu to specify how an alarm should be activated.

PROGRAM
Use this menu to specify which camera and monitor be used to capture the scene when an alarm comes in.

INFORMATION
This menu displays the most recent alarm logs stored in the system's memory. A maximum of 512 alarm logs are possible.

P/T menu

This menu allows you to control the pan/tilt unit operations. It contains the following sub-menus.

PRESET
Use this menu to set or clear a camera's preset position.

PATTERN
Depending on the type of the pan/tilt unit used, you can describe its movement, up to 30 seconds, using this menu.

MULTI PICTURE menu

This menu is available only when the Multi Picture Board (not supplied) is isntalled in the CSP-5000E System Controller.

PASSWORD menu

This menu allows you to register users (up to 128) and set up password and limit their access to the system's functions.

LOGOFF menu

Use this menu to log off the system.

About the System Menus

Menu Tree Diagram

Refer to the indicated pages for detailed explanations.

INPUT CONFIGURE
- SOURCE ID — 29(EN)
- CABLE COMPENSATION — 30(EN)
- RECEIVER TYPE — 31(EN)
- VD — 32(EN)
- P/T LIMIT — 33(EN)

SYSTEM CONFIGURE
- DATE & TIME — 34(EN)
- KEYBOARD MONITOR — 34(EN)
- LANGUAGE — 35(EN)

SWITCHING PROGRAM
- SEQUENCE
  - TOUR1-8 — 22(EN)
  - COPY — 24(EN)
- GROUP
  - TOUR1 — 25(EN)
  - . . .
  - TOUR8 — 25(EN)
- EVENT
  - EVENT(TIME)
    - EVENT1 — 26(EN)
    - . . .
    - EVENT8 — 26(EN)
  - SCHEDULE(WEEK) — 27(EN)
  - SCHEDULE(DATE)
    - JAN — 28(EN)
    - . . .
    - DEC — 28(EN)

ALARM
- INPUT POLARITY — 36(EN)
- PROGRAM
  - CONTROLLER — 36(EN)
  - RECEIVER — 37(EN)
- INFORMATION — 38(EN)

P/T
- PRESET
  - SET — 39(EN)
  - CLEAR — 40(EN)
- PATTERN — 41(EN)

MULTI PICTURE — Available only when the Multi Picture Board (not supplied) is installed in the CSP-5000E System Controller.

PASSWORD
- USER ID
  - PTZ PRIORITY — 42(EN)
  - MENU — 43(EN)
  - CAMERA — 43(EN)
  - MONITOR — 44(EN)
  - TOUR — 44(EN)

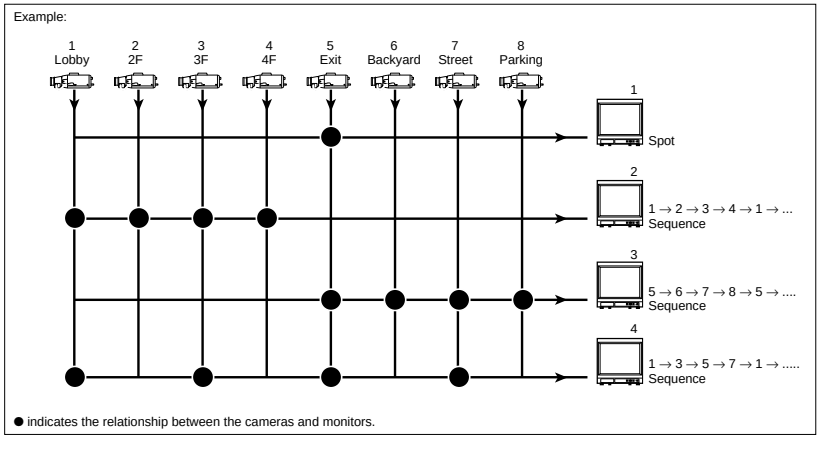
LOGOFF — 17(EN)

Programming

About Sequence, Tour, and Event

The CSP-5000E System Controller allows for very flexible control of specific cameras and monitors for surveillance. This is possible through programming sequences, tours, and events.

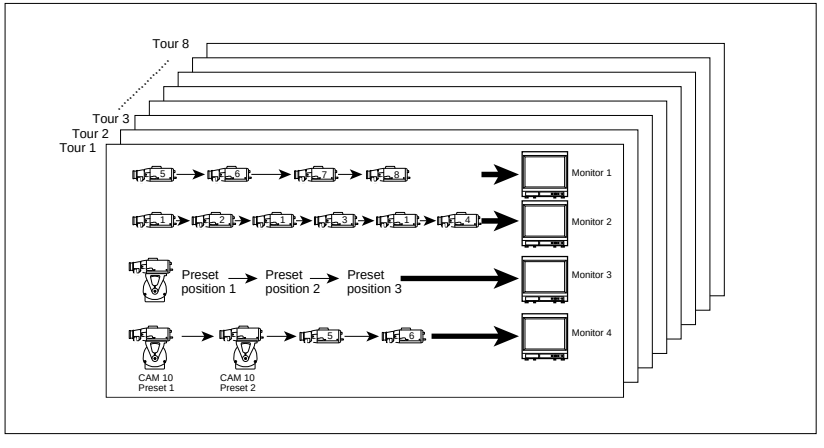
What is a sequence?



A sequence specifies all steps of camera switching on a monitor. In the example above, the camera sequence for monitor 2 is 1 → 2 → 3 → 4. A sequence can be up to 128 steps, or be down to just one, as illustrated on monitor 1 which constantly captures scene from camera 5. Each step can further contain a camera's preset position and dwell time (1-30 seconds). However, a sequence must exist within a tour.

Programming

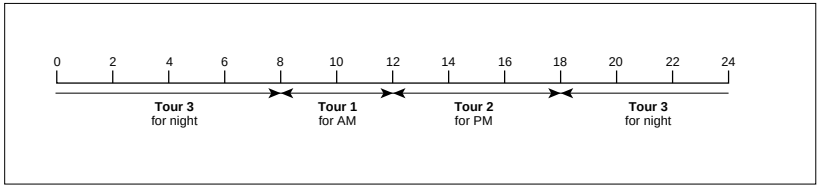
What is a tour?



Sequences cannot be executed individually; they must be organized into a tour. Therefore, a tour is a collection of sequences of all the monitors (up to 32). Tours make surveillance much easier as you can control a total of 128 cameras on 32 monitors all at the same time.

You can program a maximum of 8 tours, and the tours can be activated both manually or by time/date events.

What is an event?



An event allows you to switch tours automatically according to time. In the illustration above, for example, tour 3 is invoked during the night time and tour 1 in the morning. In other words, event is a schedule for switching tours for a 24-hour. Up to 8 steps in switching tours can be done in a day.

Furthermore, you can set up an event to execute on a particular day of the week, or a particular date of the current year. This makes surveillance very flexible to meet your needs.

Programming Sequences and Tours

As described earlier, a sequence specifies all steps of camera switching on a monitor. The sequences for all the monitors are organized as a tour. You can program up to 8 tours.

Follow the steps below to create sequences and organize them into a tour.

1 From the main menu, select “SWITCHING PROGRAM” and then press the SET key.

```
SWITCHING PROGRAM

→   SEQUENCE
    GROUP
    EVENT
```

2 Select “SEQUENCE” and then press the SET key.

```
SEQUENCE

→   TOUR1-8
    COPY
```

3 Select “TOUR1-8” and then press the SET key.

```
SEQUENCE

→   TOUR1
    TOUR2
    TOUR3
    TOUR4
    TOUR5
    TOUR6
    TOUR7
    TOUR8
```

4 Select a tour number (TOUR1 in this example) to create and organize your new sequences, and then press the SET key.

```
SEQUENCE
  TOUR1

SELECT MONITOR NO.
→  1    9   17   25
   2   10   18   26
   3   11   19   27
   4   12   20   28
   5   13   21   29
   6   14   22   30
   7   15   23   31
   8   16   24   32
```

5 Select a monitor number (MONITOR1 in this example) to start creating a sequence for that monitor, and then press the SET key.

```
TOUR1-MONITOR1

  STEP   CAM   PRE   DWL
→  1      1           0
   2      1           0
   3      1           0
   4      1           0
   5      1           0
   6      1           0
   7      1           0
   8      1           0
INTERNAL
```

6 Start with step 1. Use the cursor keys to move around, then with the 10-key pad enter a camera number, its preset position, and dwell time.
The preset position must have been set in the PRESET menu.
If the dwell time is 0, then the camera will be skipped.
To use only a camera in a tour, specify only step 1. In this case, the dwell time can be any value between 1 and 30.
You can also use the cursor left/right keys to change the timing mode between INTERNAL and EXTERNAL.

7 Continue with other steps and set the preset position and dwell time for each of the desired cameras for the monitor. If necessary, press the NEXT or PREVIOUS key to see other pages.

8 When you are ready, press the SET key to accept the changes.

Note

You can start a tour manually from the keyboard, or more often tie it to an event.

Copying a Tour

Creating a tour may take time and a lot of work. If the tours you are going to create are similar, you can create a tour, then copy and modify it to create new tours, as follows:

1 From the main menu, select SWITCHING "PROGRAM" and then press the SET key.

```
        SWITCHING PROGRAM

  →     SEQUENCE
        GROUP
        EVENT
```

2 Select "SEQUENCE" and then press the SET key.

```
            SEQUENCE

  →     TOUR1-8
        COPY
```

3 Select "COPY" and then press the SET key.

```
            TOUR COPY

        FROM    TO
  → ■
```

4 Enter the tour number you want to copy from, as well as the tour number you want to copy to. Then press the SET key.

Once you copy the tour, you can go to select the new tour from the SEQUENCE menu and modify it as desired. For details, see "Programming sequences and Tours" on page 22(EN).

Grouping Sequences

You can synchronize the dwell times of cameras to prevent pictures from changing at different times on different monitors. This makes it easy for operators to follow the action captured by the cameras.

Grouping can only be done for sequences within a tour. In a group, the sequence with the smallest monitor number becomes the master sequence for comparison. Grouping will take effect only when one of the following conditions is met:

- Dwell times in the master sequence are all identical.
- The number of steps for all other monitors in the group is equal to that of the master sequence.
- The number of steps for all other monitors in the group is multiple of that of the master sequence.

Follow the steps below to group sequences within a tour.

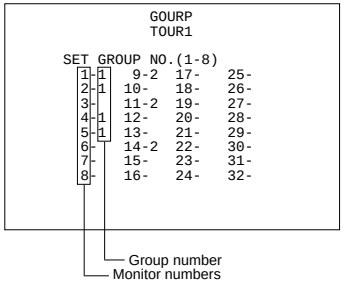
1 From the main menu, select "SWITCHING PROGRAM" and then press the SET key.

```
        SWITCHING PROGRAM

  →     SEQUENCE
        GROUP
        EVENT
```

2 Select "GROUP" and then press the SET key.

```
              GROUP

  →     TOUR1
        TOUR2
        TOUR3
        TOUR4
        TOUR5
        TOUR6
        TOUR7
        TOUR8
```

3 Select a tour (TOUR1 in this example), and then press the SET key.



4 Use the cursor keys to move around. Then enter a same group number (from 1 to 8) to the right of the monitor numbers you want to synchronize.

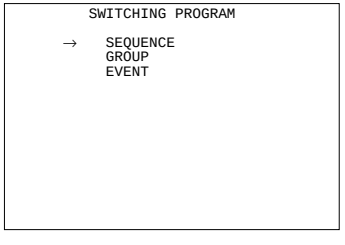
5 When you are ready, press the SET key to accept the changes.
If you have grouped sequences for the currently selected tour, the tour will start immediately.

Programming an Event

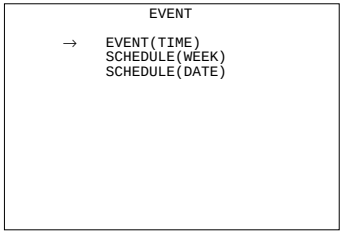
If you want to start the tours automatically, you need to tie them to events. Also, you can organize to have different tour to run at different time of the day, on different day of the week, or even on a specific date of the year.

Follow the steps below to program an event.

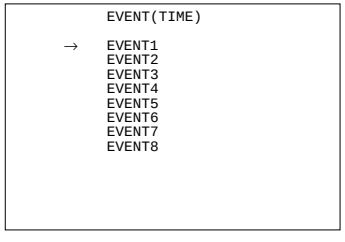
1 From the main menu, select “SWITCHING PROGRAM” and then press the SET key.



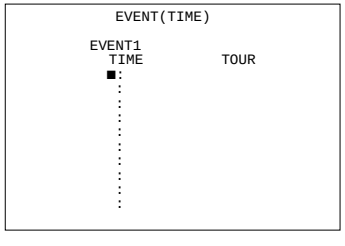
2 Select “EVENT” and then press the SET key.



3 Select “EVENT(TIME)” and press the SET key.



4 Select an event and press the SET key.



5 Use the cursor keys to move around, then enter the times of the day (using the 24-hour format) and the tour to execute.

6 When you are ready, press the SET key to accept the changes.

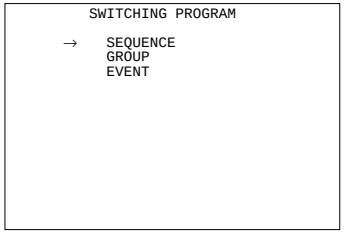
You can create up to 8 events of the day, then you need to specify when to activate the event. See the following sections on planning a schedule.

Programming a Weekly Schedule

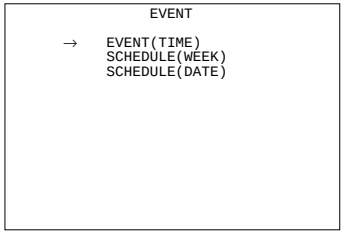
After you have created the events of tours for a day, you need to tie them to a schedule so that when the day and time come, the event will activate to start the tours automatically.

Follow the steps below to create a weekly schedule of events.

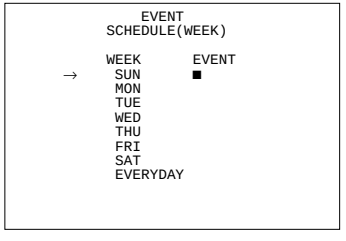
1 From the main menu, select “SWITCHING PROGRAM” and then press the SET key.



2 Select “EVENT” and then press the SET key.



3 Select “SCHEDULE(WEEK)” and press the SET key.



4 Enter the event numbers you want to program into a week. You can use the same event everyday, or specify different event for different day of the week.

5 When you are ready, press the SET key to accept the changes.

Programming a Daily Schedule

Apart from the weekly schedule of events, you can also program the events for specific dates of the current year.

Follow the steps below to create a daily schedule of events.

1 From the main menu, select “SWITCHING PROGRAM” and then press the SET key.

```
        SWITCHING PROGRAM

   →    SEQUENCE
        GROUP
        EVENT
```

2 Select “EVENT” and then press the SET key.

```
                EVENT

   →    EVENT(TIME)
        SCHEDULE(WEEK)
        SCHEDULE(DATE)
```

3 Select “SCHEDULE(DATE)” and then press the SET key.

```
                EVENT
          SCHEDULE(DATE)

   →    JAN     JUL
        FEB     AUG
        MAR     SEP
        APR     OCT
        MAY     NOV
        JUN     DEC
```

4 Select a month (JAN in this example) and press the SET key.

```
          SCHEDULE(DATE)
       SET EVENT NO.(1-8)

     1996      JAN
       1-     9-    17-    25-
       2-    10-    18-    26-
       3-    11-    19-    27-
       4-    12-    20-    28-
       5-    13-    21-    29-
       6-    14-    22-    30-
       7-    15-    23-    31-
       8-    16-    24-
```

5 Select a date and then enter the desired event to execute for that day.

6 Repeat the same procedure with other desired dates. When you are ready, press the SET key.

Continue with other months and dates. When you are ready, press the SET key to finish.

Note

If the daily schedule of events crash with the weekly schedule, then the daily schedule will prevail.

Configuring the Input Source

Assigning IDs to cameras

You can assign a name to each camera. When you press the DISPLAY key, the names will appear on the selected monitor.

1 From the main menu, select “INPUT CONFIGURE” and then press the SET key.

```
        INPUT CONFIGURE

   →    SOURCE ID
        CABLE COMPENSATION
        RECEIVER TYPE
        VD
        P/T LIMIT
```

2 Select “SOURCE ID” and then press the SET key.

```
              SOURCE ID
                                ABC
        CAM       ID
   →     1
         2
         3
         4
         5
         6
         7
         8
```

3 Select a camera number. If necessary, press the NEXT or PREVIOUS key to see other pages.
If the keyboard monitor is configured correctly, you can view the picture from the camera selected by the cursor up/down keys.

4 Use the 10-key pad to enter a name, up to 12 characters, for the selected camera.
See the following sections on how to enter a character. After entering a character, use the cursor keys to move the cursor to the next position.

5 Repeat the same procedure with other cameras. When you are ready, press the SET key to accept the changes.

To enter a letter

Pressing This Key Repeatedly	You Get
1	1ABC
2	2DEF
3	3GHI
4	4JKL
5	5MNO
6	6PQR
7	7STU
8	8VWX
9	9YZ
0	0, special characters (See below.)
#	(space)
*	# & – / + * = • () <> ↑ ↓ → ← ~ ■

To enter special characters

Depending on which language is in use now, you can press the “0” key repeatedly to obtain the character for that language, as indicated in the following table.

Japanese	: ; ” ´ ` . , ! ?
English	: ; ” ´ ` . , ! ?
French	á à é è ù Ç ç â ê î ô û ï . , ! ?
German	Ä ä Ö ö Ü ü ß . , ! ?
Spanish	á é í ó ú ü Ñ ñ . , ¡ ! ¿ ?
Italian	à è é ì ò ù . , ! ?

To switch between upper- and lower-case

Press the RECALL key.

To delete a character

Press the TOUR key.

http://getMANUAL.com

Specifying a camera's cable length

Use the "CABLE COMPENSATION" setting to make up for any signal loss over the cable line connecting a camera.

1 From the main menu, select "INPUT CONFIGURE" and then press the SET key.

```
          INPUT CONFIGURE

    →     SOURCE ID
          CABLE COMPENSATION
          RECEIVER TYPE
          VD
          P/T LIMIT
```

2 Select "CABLE COMPENSATION" and then press the SET key.

```
          CABLE COMPENSATION

          CAM      TYPE
    →      1       N
           2       N
           3       N
           4       N
           5       N
           6       N
           7       N
           8       N
```

3 Select a camera number. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to cycle through the options: N, S, M, L, and LL.
See the following section for description of the options.

5 Repeat the same procedure with other cameras. When you are ready, press the SET key to accept the changes.

Options and corresponding cable length

Option	N	S	M	L	LL
Cable Length	0-160m	160-400m	400-700m	700-900m	900-1200m

(cable type: 5C-2V)

Specifying the receiver type

Use the "RECEIVER TYPE" setting to specify the type of camera in use.

1 From the main menu, select "INPUT CONFIGURE" and then press the SET key.

```
          INPUT CONFIGURE

    →     SOURCE ID
          CABLE COMPENSATION
          RECEIVER TYPE
          VD
          P/T LIMIT
```

2 Select "RECEIVER TYPE" and then press the SET key.

```
          RECEIVER TYPE

          CAM      TYPE
    →      1       NONE
           2       NONE
           3       NONE
           4       NONE
           5       NONE
           6       NONE
           7       NONE
           8       NONE
```

3 Select a camera number. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to cycle through the options: NONE, STANDARD, STANDARD (PP), MULTIPLE, and TWIST PAIR.
See the following section for description of the options.

5 Repeat the same procedure with other cameras. When you are ready, press the SET key to accept the changes.

Options for receiver type

NONE: No receiver
STANDARD: Pelco Coaxitron™ receiver
STANDARD (PP): Pelco Coaxitron™ receiver (preset type)
MULTIPLE: Pelco Intercept™ dome camera
TWIST PAIR: Videmech receiver

Setting the synchronization mode

The CSP-5000E System Controller supports both line lock and VD-S. If a Sony VD-S lock camera is installed, you can turn on the VD setting to enable external syncronization.

1 From the main menu, select “INPUT CONFIGURE” and then press the SET key.

```
          INPUT CONFIGURE

→    SOURCE ID
     CABLE COMPENSATION
     RECEIVER TYPE
     VD
     P/T LIMIT
```

2 Select “VD” and then press the SET key.

```
                VD

     CAM      TYPE
→     1       OFF
      2       OFF
      3       OFF
      4       OFF
      5       OFF
      6       OFF
      7       OFF
      8       OFF
```

3 Select a camera number. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to cycle through the options: OFF, and ON. Select “ON” for a Sony VD-S lock camera.

5 Repeat the same procedure with other cameras. When you are ready, press the SET key to accept the changes.

Limiting the pan/tilt unit movement

Depending on the receiver used, you can use the “P/T LIMIT” setting to limit the pan/tilt unit movement in horizontal and vertical directions.
This is available only when the receiver type of the camera is “TWIST PAIR.”

1 From the main menu, select “INPUT COFIGURE” and then press the SET key.

```
          INPUT CONFIGURE

→  SOURCE ID
   CABLE COMPENSATION
   RECEIVER TYPE
   VD
   P/T LIMIT
```

2 Select “P/T LIMIT” and then press the SET key.

```
          P/T LIMIT

  SELECT RECEIVER NO.
→ 1      9      17     25
  2      10     18     26
  3      11     19     27
  4      12     20     28
  5      13     21     29
  6      14     22     30
  7      15     23     31
  8      16     24     32
```

Note that only the receiver numbers whose “RECEIVER TYPE” is set to “TWIST PAIR” in the RECEIVER TYPE menu.

3 Select a receiver number. If necessary, press the NEXT or PREVIOUS key to see other pages. Then press the SET key.

```
                P/T LIMIT

     →  LEFT
        RIGHT
        UP
        DOWN
        CLEAR
```

4 Use the cursor keys to select the direction you want to limit (RIGHT LIMIT in this example) and then press the SET key.

```
        RIGHT LIMIT SETTING
```

5 Use the joyball to control the pan/tilt unit so that the camera moves to the rightmost position where you want to limit the movement.

6 Press the SET key.

7 Repeat the above procedure to limit the movement in other directions.

To clear the limit in all directions
Select “CLEAR” in step 4 and then press the SET key.

Configuring the System Controller

Setting the date and time

You must set the correct date and time in order that the event programs can activate correctly.

1 From the main menu, select “SYSTEM CONFIGURE” and then press the SET key.

```
          SYSTEM CONFIGURE

    →     DATE & TIME
          KEYBOARD MONITOR
          LANGUAGE
```

2 Select “DATE & TIME,” and then press the SET key.

```
            DATA & TIME

           97 5-21 14:45

    →       YY-MM-DD
            MM-DD-YY
            DD-MM-YY
```

3 Use the cursor keys to move the cursor, then enter the date and time with the 10-key pad.

4 Use the cursor keys to select a display format:

YY-MM-DD	97- 5-21	14:45
MM-DD-YY	5-21-97	14:45
DD-MM-YY	21- 5-97	14:45

5 When you are ready, press the SET key to accept the changes.

Registering keyboard monitor

Before performing this operation, be sure to check the CSP-5000E System Controller.
Write down the KBD I/F connector number (1 to 8) and the VIDEO OUT terminal number (1 to 32) where each keyboard is connected.

1 From the main menu, select “SYSTEM CONFIGURE” and then press the SET key.

```
          SYSTEM CONFIGURE

    →     DATE & TIME
          KEYBOARD MONITOR
          LANGUAGE
```

2 Select “KEYBOARD MONITOR,” and then press the SET key.

```
          KEYBOARD MONITOR

        I/F     MONITOR
    →     1     1
          2     2
          3     3
          4     4
          5     5
          6     6
          7     7
          8     TWIST PAIR
```

3 Use the cursor keys to select a KBD I/F number, then enter the corresponding VIDEO OUT terminal number.
For example, if a keyboard is connected to the KBD I/F connector #1 and the VIDEO OUT terminal #32, select I/F 1 and enter “32.”
If the Videmech receiver is connected to the CSP-5000E System Controller, you must select I/F 8 and use the cursor keys to switch the number to TWIST PAIR.

4 When you are ready, press the SET key to accept the changes.

Selecting the system language

If you want to give the source ID to cameras using a certain language, you need to specify the language in the “LANGUAGE” menu, as follows:

1 From the main menu, select “SYSTEM CONFIGURE” and then press the SET key.

```
          SYSTEM CONFIGURE

    →     DATE & TIME
          KEYBOARD MONITOR
          LANGUAGE
```

2 Select “LANGUAGE,” and then press the SET key.

```
              LANGUAGE

    →     JAPANESE
          ENGLISH
          FRENCH
          GERMAN
          SPANISH
          ITALIAN
```

3 Use the cursor keys to select a language.

4 When you are ready, press the SET key to accept the changes.

When “FRENCH” is selected, the “MONITOR” indication changes to “MONITEUR.”

Configuring the Alarm

Specifying the alarm input mode

You can set up a maximum of 256 alarm inputs.

1 From the main menu, select “ALARM” and then press the SET key.

```
                ALARM

→    INPUT POLARITY
     PROGRAM
     INFORMATION
```

2 Select “INPUT POLARITY,” and then press the SET key.

```
                ALARM
          INPUT POLARITY

          IN        POLARITY
→          1        OPEN
           2        OPEN
           3        OPEN
           4        OPEN
           5        OPEN
           6        OPEN
           7        OPEN
           8        OPEN
```

3 Select an alarm. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to choose between the options: OPEN and CLOSE.
Choosing OPEN will trigger the alarm when the alarm status changes from “open” to “close.”
Choosing CLOSE will trigger the alarm when the alarm status changes from “close” to “open.”

5 When you are ready, press the SET key to accept the changes.

Configuring the controller alarm output mode

1 From the main menu, select “ALARM” and then press the SET key.

```
                ALARM

→    INPUT POLARITY
     PROGRAM
     INFORMATION
```

2 Select “PROGRAM,” and then press the SET key.

```
                ALARM
              PROGRAM

→    CONTROLLER
     RECEIVER
```

“CONTROLLER” is used to configure the alarm input on the rear panel of the CSP-5000E System Controller, and “RECEIVER” is used to confiture the alarm input on the twisted pair type receiver.

3 Select “CONTROLLER” and then press the SET key.

```
                ALARM
          PROGRAM(CONTROLLER)

          SELECT ALARM IN NO.
→          1     9   17   25
           2    10   18   26
           3    11   19   27
           4    12   20   28
           5    13   21   29
           6    14   22   30
           7    15   23   31
           8    16   24   32
```

4 Select an alarm (1 in this example), then press the SET key. If necessary, press the NEXT or PREVIOUS key to see other pages.

```
          PROGRAM(CONTROLLER)

          ALARM  IN   1
→                OUT  ■
                 TIME
          MON    CAM   PRE
```

5 At the OUT field, enter the number of alarm output terminal (1 to 32).
At the TIME field, enter the alarm duration (1-120 seconds).
At the MON field, enter the monitor number (1-32).
At the CAM field, enter the camera number (1 - 128).
At the PRE field, enter the preset position.
You can assign up to four monitors and four cameras.
Example:

```
          MON    CAM   PRE
           1      5
           2      6
           3      8
           3      9
```

You can assign different cameras to the same monitor.
Pictures from the different cameras will be switched with an interval of one second on the monitor.

6 When you are ready, press the SET key to accept the changes.

Configuring the receiver alarm output mode

Up to 128 receivers are supported.

1 From the main menu, select “ALARM” and then press the SET key.

```
                ALARM

→    INPUT POLARITY
     PROGRAM
     INFORMATION
```

2 Select “PROGRAM,” and then press the SET key.

```
                PROGRAM

→    CONTROLLER
     RECEIVER
```

3 Select “RECEIVER” and then press the SET key.

```
                ALARM
          PROGRAM(RECEIVER)

          SELECT RECEIVER NO.
→          1     9   17   25
           2    10   18   26
           3    11   19   27
           4    12   20   28
           5    13   21   29
           6    14   22   30
           7    15   23   31
           8    16   24   32
```

Only the twisted pair type receiver numbers are displayed.

4 Select an alarm using the NEXT and PREVIOUS keys (1 in this example), then press the SET key.

```
            ALARM
      PROGRAM(RECEIVER)

    RECEIVER NO.1
    ALARM    IN 1
→            OUT ■
             TIME
       MON   CAM   PRE
```

5 At the OUT field, enter the number of alarm output terminal (1 to 32).
At the TIME field, enter the alarm duration (1-120 seconds).
At the MON field, enter the monitor number (1-32).
At the CAM field, enter the camera number (1 - 128).
At the PRE field, enter the preset position.
You can assign up to four monitors and four cameras.
Example:

```
MON    CAM   PRE
 1      5
 2      6
 3      8
 3      9
```

6 When you are ready, press the SET key to accept the changes.

Viewing alarm log

The system logs the most recent 512 alarms so that you can view them later.

1 From the main menu, select “ALARM” and then press the SET key.

```
            ALARM

→   INPUT POLARITY
    PROGRAM
    INFORMATION
```

2 Select “INFORMATION,” and then press the SET key.

```
          ALARM INFORMATION

IN      DATE      TIME
 33-1   13-11-96  13:58:05
 33-2   13-11-96  13:59:10
128-4   15-11-96  17:03:30
  5     16-11-96  08:27:15
256     18-11-96  21:18:42
```

3 The most recent alarms appear on the screen. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 When you are ready, press the MENU key to exit.

Defining the Preset Position and Pan/Tilt Pattern

Depending on the receiver used, you can define preset positions and pan/tilt patterns for a camera.

Defining the preset position

1 Select a camera you want to define preset positions and pan/tilt patterns for.

2 From the main menu, select “P/T” and then press the SET key.

```
            P/T

→   PRESET
    PATTERN
```

3 Select “PRESET,” and then press the SET key.

```
           PRESET

→   SET
    CLEAR
```

4 Select “SET,” and then press the SET key.

```
          PRESET(SET)

INPUT PRESET NUMBER
  →   ■
```

5 Use the joyball and the lens keys to adjust the camera’s pan/tilt and lens position.
When you are satisfied, enter the preset number with the 10-key pad. Then press the SET key to accept the changes.
Depending on the Videmech Receiver and pan/tilt unit type, you can repeat this step and set multiple preset positions for this camera.

6 When you are ready, press the MENU key.

Clearing the defined preset position

If you have set up preset positions for a camera, you can clear them using the steps below.

1 Select a camera you have set up preset positions and pan/tilt patterns for.

2 From the main menu, select “P/T” and then press the SET key.

```
P/T

→  PRESET
   PATTERN
```

3 Select “PRESET,” and then press the SET key.

```
PRESET

→  SET
   CLEAR
```

4 Select “CLEAR,” and then press the SET key.

```
PRESET(CLEAR)

INPUT CLEAR NUMBER
  →  ■
```

5 Enter the preset number you want to clear. Finally, press the SET key to accept the changes.
If there are additional preset positions for this camera that you want to clear, you can repeat this step to clear them.

6 When you are ready, press the MENU key.

Defining the pan/tilt pattern

You can define the pan/tilt pattern, up to 30 seconds, for the currently selected camera.
The defined pan/tilt pattern can be recalled by the PATTERN key.
Note that this function can be used only with specific pan/tilt units.

1 Select a camera you want to define the pan/tilt pattern for.

2 From the main menu, select “P/T” and then press the SET key.

```
P/T

→  PRESET
   PATTERN
```

3 Select “PATTERN,” and then press the SET key.

```
PATTERN

START POINT

PRESS SET KEY
```

4 Press the SET key.
The menu changes to the following.

```
PATTERN

END POINT

PRESS SET KEY
```

5 Create a camera move pattern using the pan/tilt unit, for up to 30 seconds, then press the SET key again.

Partitioning the System

Up to 7 operators can connect their keyboards to the CSP-5000E System Controller simultaneously and control its functions. You can use the security function to limit what each operator can do. Normally, you appoint a system administer to register operator IDs and passwords, and manage their access to the CSP-5000E System Controller.

Assigning passwords

Up to 128 users can be registered into the system. For simplicity, you may designate a user as the system administer who has access to the PASSWORD menu to make changes for other users.

1 From the main menu, select “PASSWORD” and then press the SET key.

```
PASSWORD

USER   ID   PASSWD
  1    ■
  2
  3
  4
  5
  6
  7
  8
```

2 Select a user. If necessary, press the NEXT or PREVIOUS key to see other pages.

3 Assign an ID and password to the selected user, using the 10-key pad. Use the cursor keys to move around. Then press the SET key.

4 When you are ready, press the SET key to proceed to specifying the user’s access to the system. See the following sections for more details.

Notes

- All IDs must be 4-digit numbers.
- All passwords must be 4-digit numbers.
- You can use the ID “****” and the password “9999” to access to the system controller and use all functions.

Assigning PTZ priority

PTZ priority determines the keyboard that will prevail when two or more keyboards issue a command to the same pan/tilt unit at the same time.

Note

Only users who can access the PASSWORD menu can make such changes.

1 From the “PASSWORD” menu, select a user and then press the SET key.

```
PASSWORD-PARTITION

→   PTZ PRIORITY
    MENU
    CAMERA
    MONITOR
    TOUR
```

2 Select “PTZ PRIORITY” and then press the SET key.

```
PASSWORD-PARTITION

 PTZ PRIORITY   8
```

3 Enter a number, 1 being the highest and 8 the lowest priority.

4 When you are ready, press the SET key to accept the change.
If the same priority is assigned to the different keyboards, the keyboard which issued a command first is given a higher priority.

Limiting access to the system menus

You can turn off some system menus so that they will not be accessible to some users.

Note

Only users who can access the PASSWORD menu can make such changes.

1 From the “PASSWORD” menu, select a user and then press the SET key.

```
PASSWORD-PARTITION

→   PTZ PRIORITY
    MENU
    CAMERA
    MONITOR
    TOUR
```

2 Select “MENU” and then press the SET key.

```
PASSWORD-PARTITION

→   INPUT CONFIGURE    ON
    SYSTEM CONFIGURE   ON
    SWITCHING PROGRAM  ON
    ALARM              ON
    P/T                ON
    PASSWORD           ON
```

3 Select a menu name, then use the cursor keys to turn “ON” or “OFF” the menu. When off, the menu will not be available to the user.

4 Repeat the same procedure with other menu names. When you are ready, press the SET key to accept the changes.

Limiting access to the cameras

If desired, you can limit a user’s access to some cameras.

Note

Only users who can access the PASSWORD menu can make such changes.

1 From the “PASSWORD” menu, select a user and then press the SET key.

```
PASSWORD-PARTITION

→   PTZ PRIORITY
    MENU
    CAMERA
    MONITOR
    TOUR
```

2 Select “CAMERA” and then press the SET key.

```
PASSWORD-PARTITION

    CAMERA
→     1     ON
      2     ON
      3     ON
      4     ON
      5     ON
      6     ON
      7     ON
      8     ON
```

3 Select a camera. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to turn “ON” or “OFF” the camera. When off, the camera will not be available to the user.

5 Repeat the same procedure with other cameras. When you are ready, press the SET key to accept the changes.

Limiting access to the monitors

Similarly, you can limit a user's access to some monitors.

Note

Only users who can access the PASSWORD menu can make such changes.

1 From the "PASSWORD" menu, select a user and then press the SET key.

```
PASSWORD-PARTITION

→   PTZ PRIORITY
    MENU
    CAMERA
    MONITOR
    TOUR
```

2 Select "MONITOR" and then press the SET key.

```
PASSWORD-PARTITION

    MONITOR
→     1     ON
      2     ON
      3     ON
      4     ON
      5     ON
      6     ON
      7     ON
      8     ON
```

3 Select a monitor. If necessary, press the NEXT or PREVIOUS key to see other pages.

4 Use the cursor keys to turn "ON" or "OFF" the monitor. When off, the monitor will not be available to the user.

5 Repeat the same procedure with other monitors. When you are ready, press the SET key to accept the changes.

Limiting access to the tour programs

Similarly, you can limit a user's access to some tour programs.

Note

Only users who can access the PASSWORD menu can make such changes.

1 From the "PASSWORD" menu, select a user and then press the SET key.

```
PASSWORD-PARTITION

→   PTZ PRIORITY
    MENU
    CAMERA
    MONITOR
    TOUR
```

2 Select "TOUR" and then press the SET key.

```
PASSWORD-PARTITION

    TOUR
→     1     ON
      2     ON
      3     ON
      4     ON
      5     ON
      6     ON
      7     ON
      8     ON
```

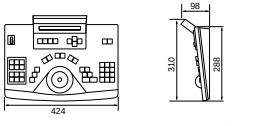
3 Select a tour.

4 Use the cursor keys to turn "ON" or "OFF" the tour. When off, the tour will not be available to the user.

5 Repeat the same procedure with other tours. When you are ready, press the SET key to accept the changes.

Specifications

Signal type	PAL/CCIR standard
Input	VIDEO INPUT (BNC type) 1Vp-p/75 ohms composite video
Output	VIDEO OUTPUT (BNC type) 1Vp-p/75 ohms composite video
Interface	KBD I/F (RJ-45 8-pin) RS-422A RCV I/F (RJ-45 8-pin) RS-422A/485 PRINTER (mini jack) Video printer
Power	220 to 240V AC, 50Hz
Power consumption	3W
Operating temperature	0˚C to 40˚C
Storage temperature	–20˚C to +60˚C
Dimensions	424 x 98 x 310 mm (w/h/d)



Unit: mm

Mass	Approx. 3.5 kg
Supplied accessories	Power cable (1) Interface cable (5m) (1) Operating Instructions

Design and specifications are subject to change without notice.

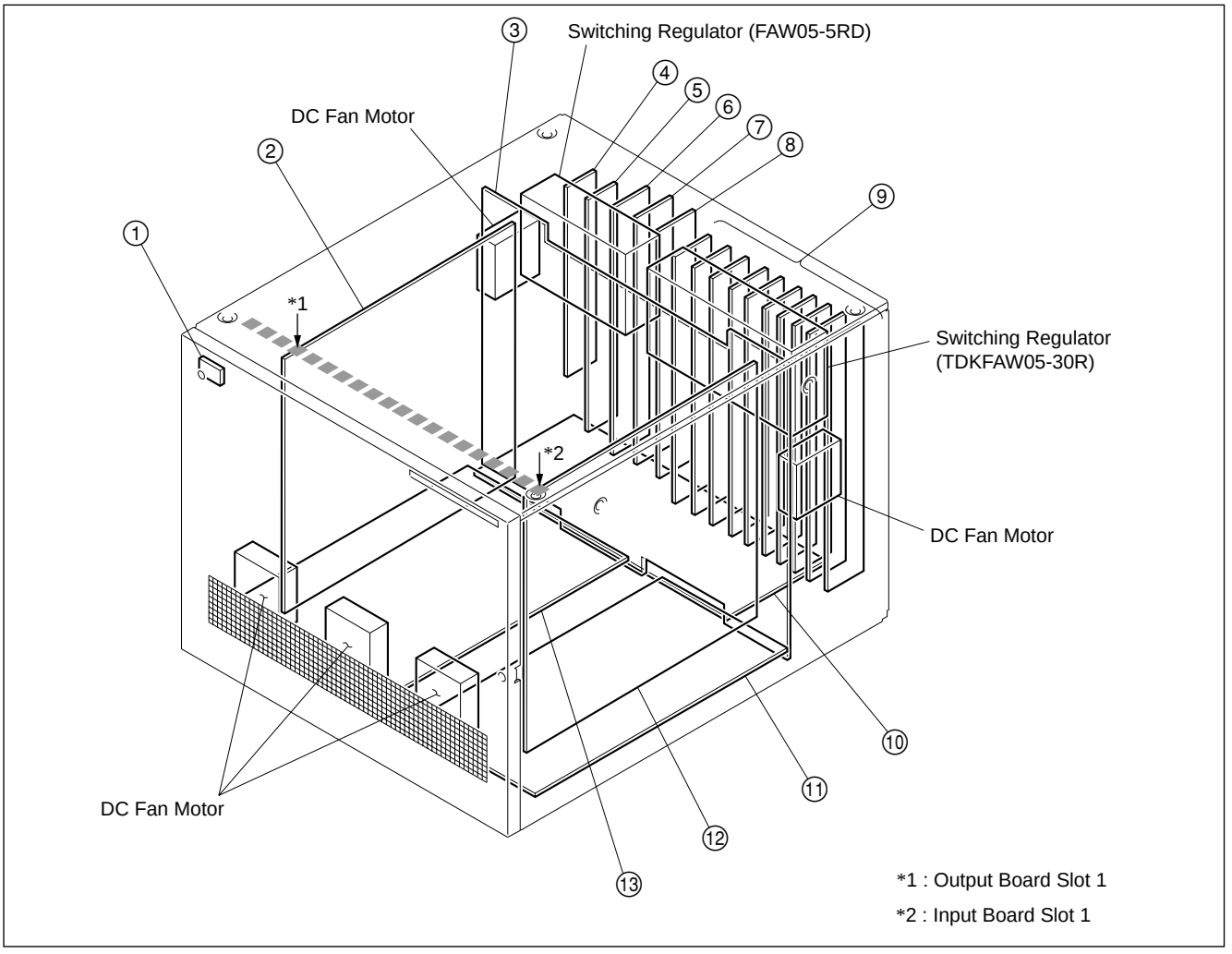
SECTION 2
SERVICE OVERVIEW

PRECAUTIONS

The following work requires two or more persons.
• Carrying the CPS-5000E.
• Pulling out the main chassis from the cabinet of the CSP-5000.

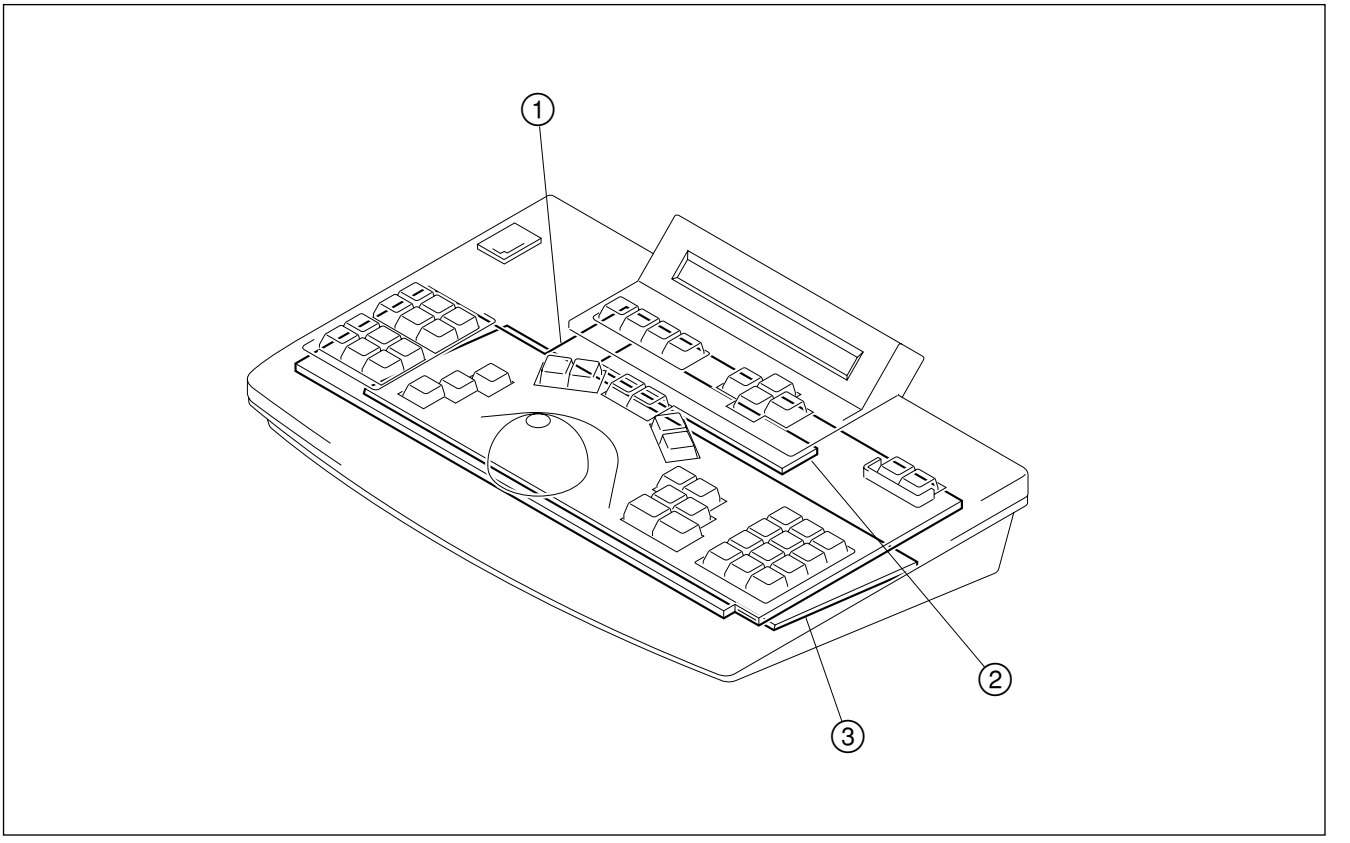
2-1. BOARD LAYOUT

2-1-1. CSP-5000E



1. LED-22 Board :Power Indicator
2. CSPB-520VC (OPM-11Board) :Output Board
3. MB-596 Board :Mother Board
4. CN-1111 Board :Connector Board [PC block (AT)]
5. CN-1093 Board :Connector Board [KBD I/F]
6. CN-1110 Board :Connector Board [alarm OUT]
7. CN-1109B Board :Connector Board [alarm IN]
8. CN-1109A Board :Connector Board [alarm IN]
9. CN-1092 Board :Connector Board [video IN/OUT]
10. CN-1094 Board :Connector Board
11. CT-156 Board :Switch Control
12. CSPB-510VC (IPM-77 Board) :Input Board
13. CPU-185 Board :Main Control

2-1-2. CSPK-5000E

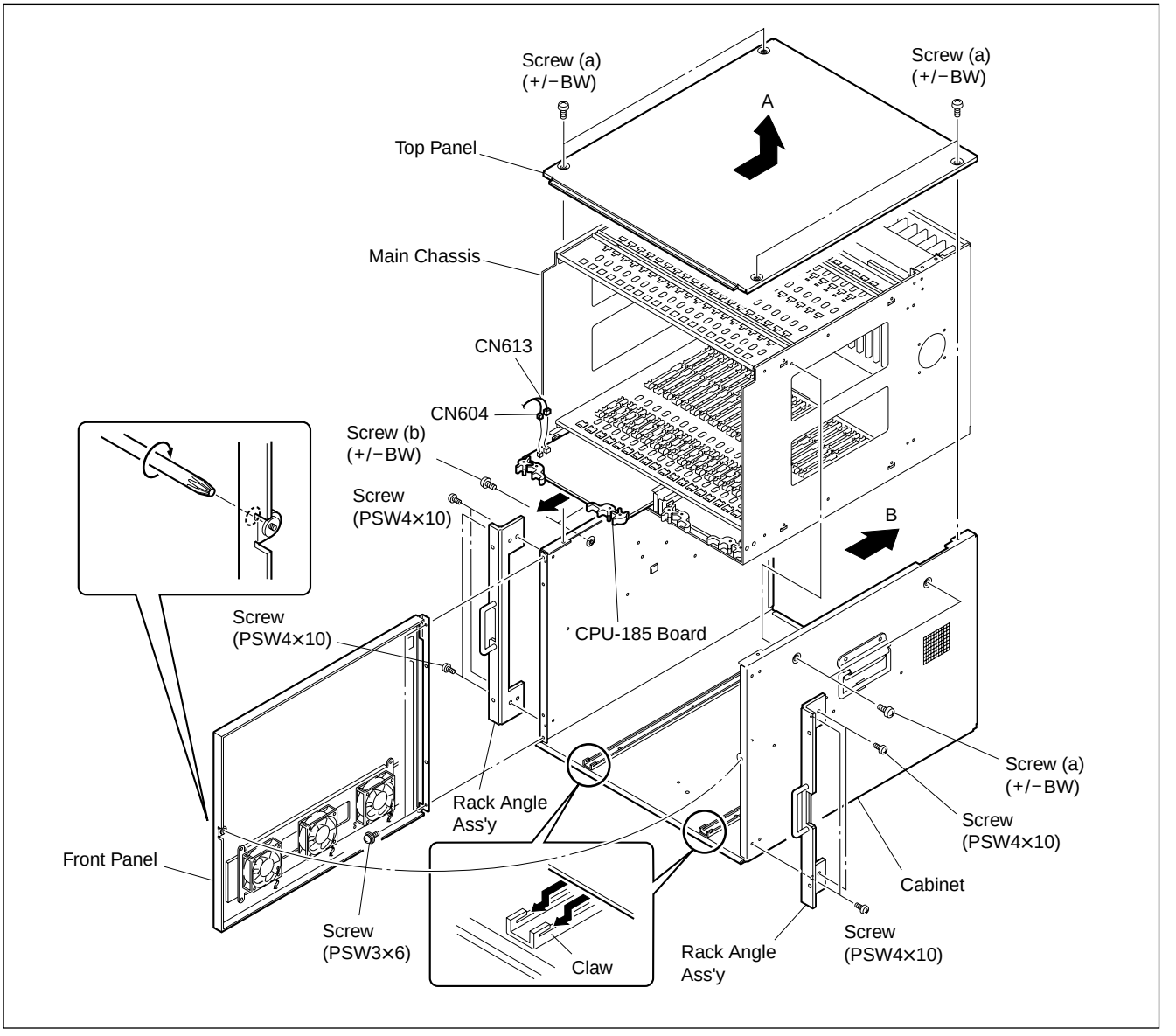


1. KIO-9 Board (Keyboard Assembly) :Key Board
2. IF-511 Board :Connector Board
3. SY-211 Board :System Control

http://getMANUAL.com

2-2. REMOVAL OF CABINET

2-2-1. CSP-5000E



Top Panel

1. Unscrew the four +/−BW screws (a), and remove the top panel in direction A.

Front Panel

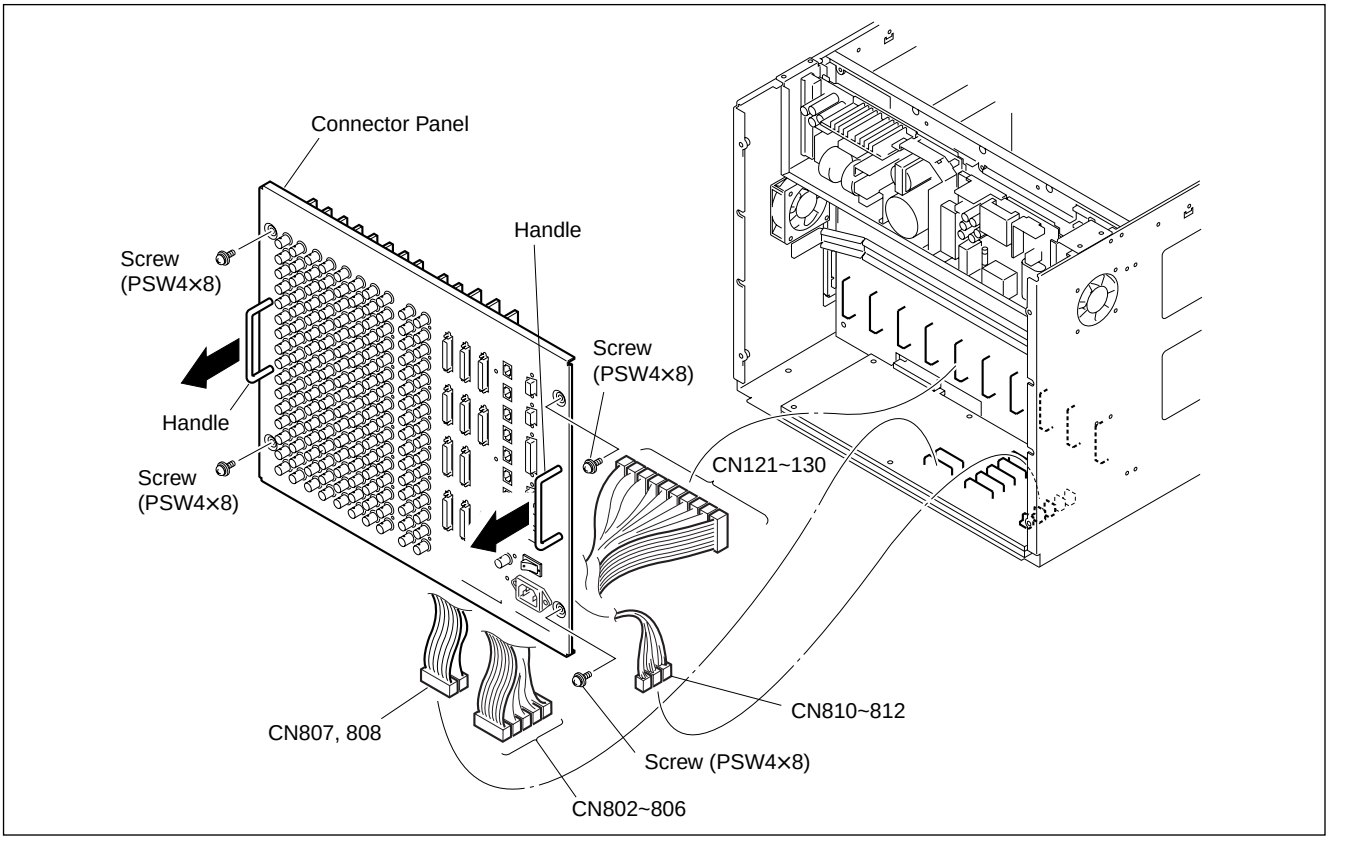
1. Loosen the panel open/close screw, and open the front panel.
2. Pull out the CPU-185 board slightly in the arrow direction, and disconnect the two connectors (CN604, 613).
3. Unscrew the two screws (PSW3×6), and remove the front panel.

Cabinet

1. Unscrew the eight screws (PSW4×10), and remove the Rack Angle Assembly.
2. Unscrew the four +/−BW screws (b), and pull out the main chassis in direction B.

Note : Hook the bottom edge of the main chassis into the two claws on the cabinet, and install the main chassis.

Connector Panel

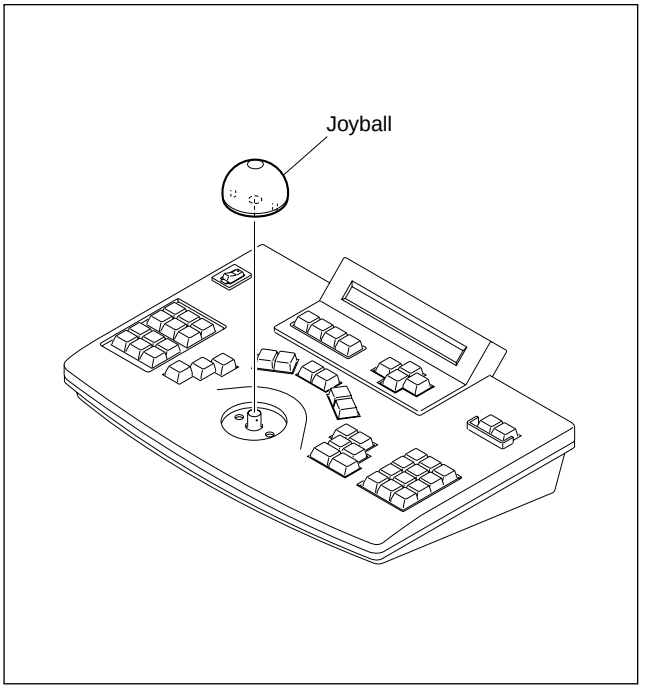


1. Unscrew the four screws (PSW4×8), and pull the handle in the arrow direction and remove the connector panel.
2. Disconnect the ten connectors (CN121 to 130) on the MB-596 board.
3. Disconnect the ten connectors (CN802 to 806, 808 to 812) on the CN-1094 Board.

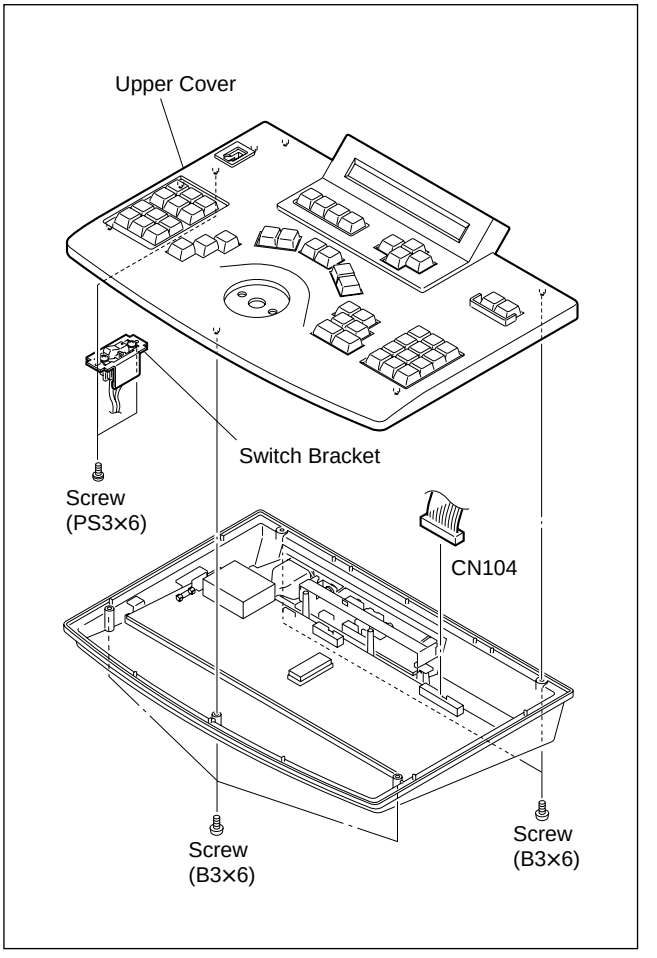
2-2-2. CSPK-5000E

Upper Cover

1. Remove the joy ball.

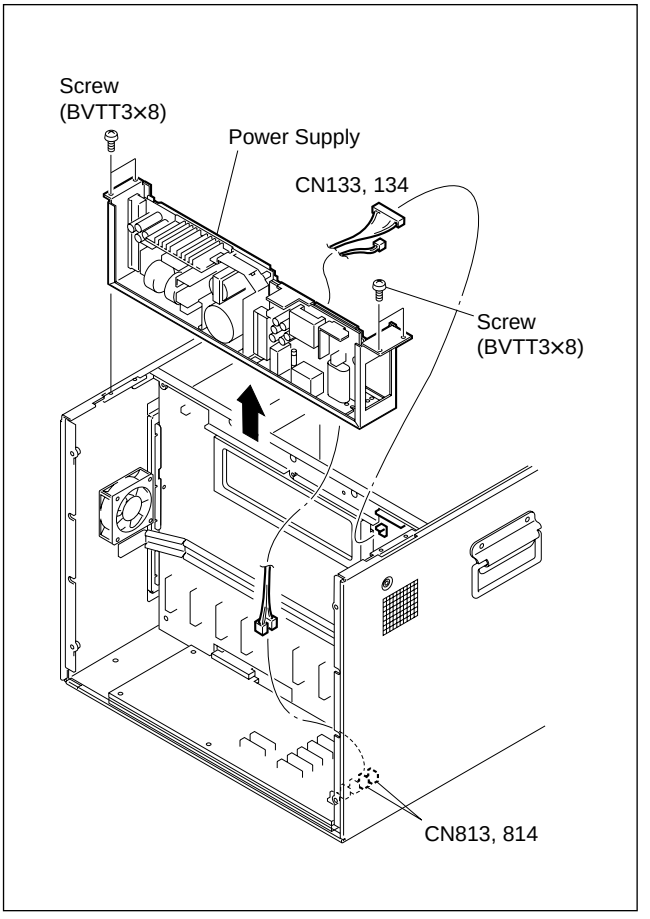


2. Unscrew the five screws (B3×6).
3. Disconnect the one connector (CN104) on the SY-211 board.
4. Unscrew the two screws (PS3×6), and remove the switch bracket in the upper cover.



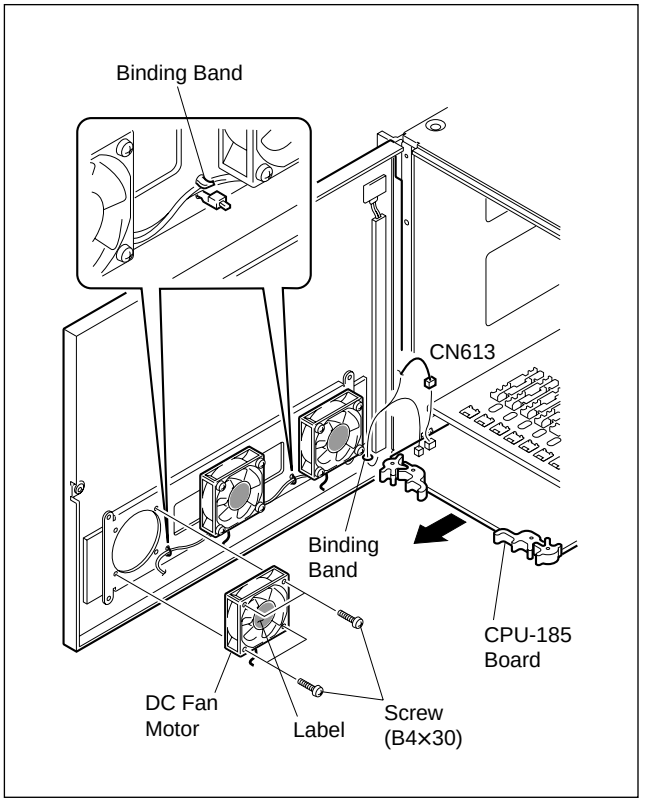
2-3. Replacement of Main Parts

2-3-1. Power Supply



1. Remove the top and rear panels. (Refer to section 2-2. Removal of Cabinet.)
2. Disconnect the two screws (CN813, 814) on the CN-1094 Board and the two screws (CN133, 134) on the MB-596 Board.
3. Unscrew the four screws (BVTT3×8), and remove the power supply in the arrow direction.

2-3-2. DC Fan Motor (Front Side)

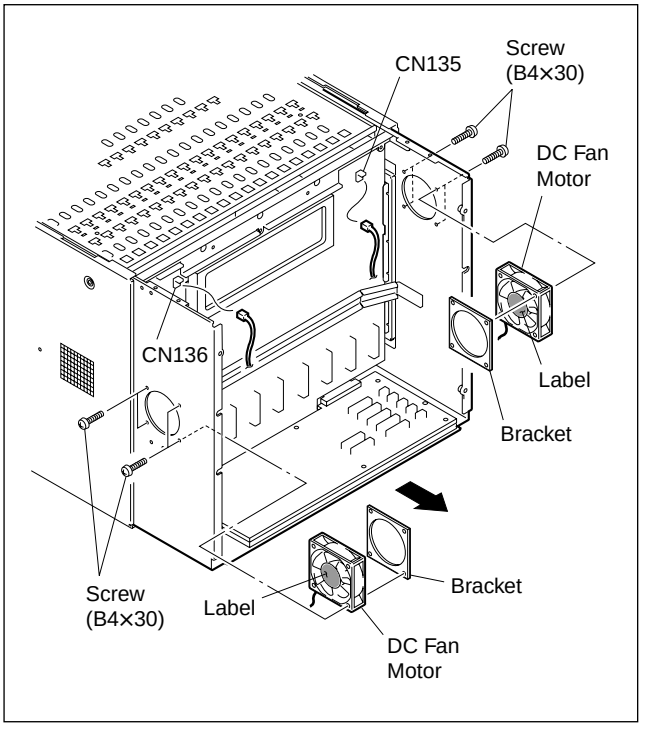


1. Open the front panel and disconnect one connector (CN613) on the CPU-185 Board. (Refer to section 2-2. Removal of Cabinet.)
2. Cut the binding band which hold the harness with a nipper.
3. Unscrew the four screws (B4×30) on each DC fan motor, and remove the DC fan motors.

Note : Install the DC fan motors, as shown in the figure, noting the direction of the motor labels.

2-3-3. DC Fan Motor (Rear Side)

1. Remove the top and rear panels. (Refer to 2-2. Removal of Cabinet.)
   Unscrew the four +/−BW screws which hold the cabinet. (Refer to section 2-2. Removal of Cabinet.)
2. Remove the power supply block. (Refer to 2-3-1. Power Supply Block.)

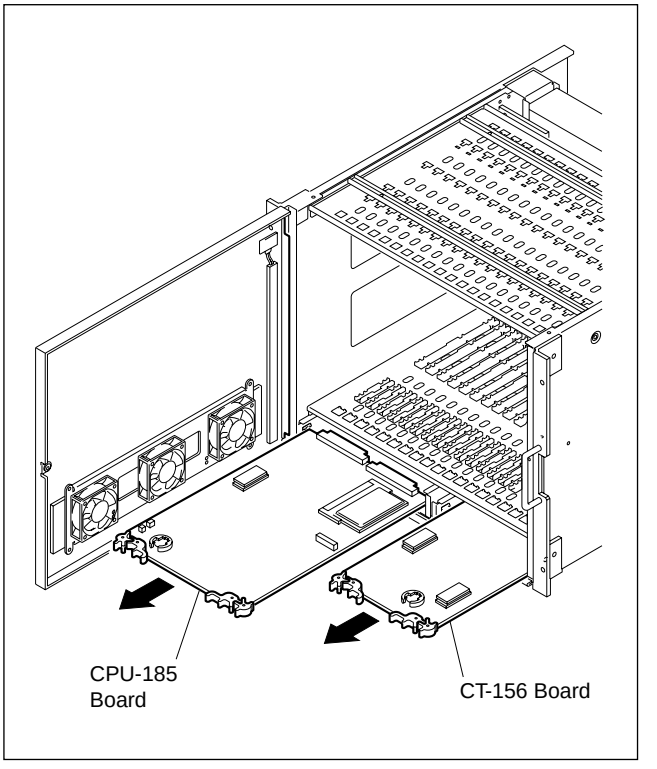


3. Pull out the main chassis in the direction of the arrow.
4. Disconnect the two connectors (CN135, 136) on the MB-596 Board, unscrew the four screws (B4×30) on each DC fan motor, and remove the DC fan motors and bracket.

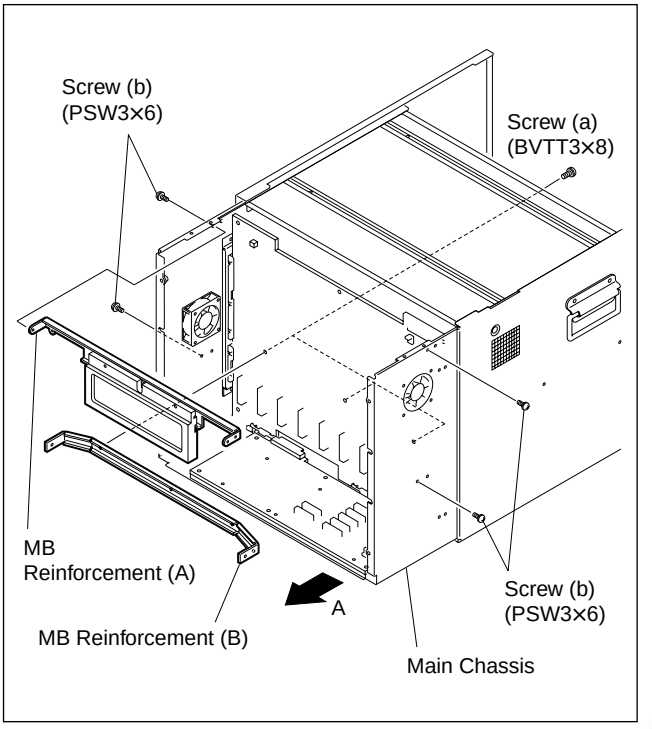
Note : Install the DC fan motor, as shown in the figure, noting the direction of the motor labels.

2-3-4. MB-596 Board

1. Remove the top panel and rear panel. (Refer to section 2-2. Removal of Cabinet.)
2. Open the front panel, and disconnect the two connectors (CN604, CN613) on the CPU-185 Board. (Refer to section 2-2. Removal of Cabinet.)
3. Pull out the CPU-185 or CT-156 Board.

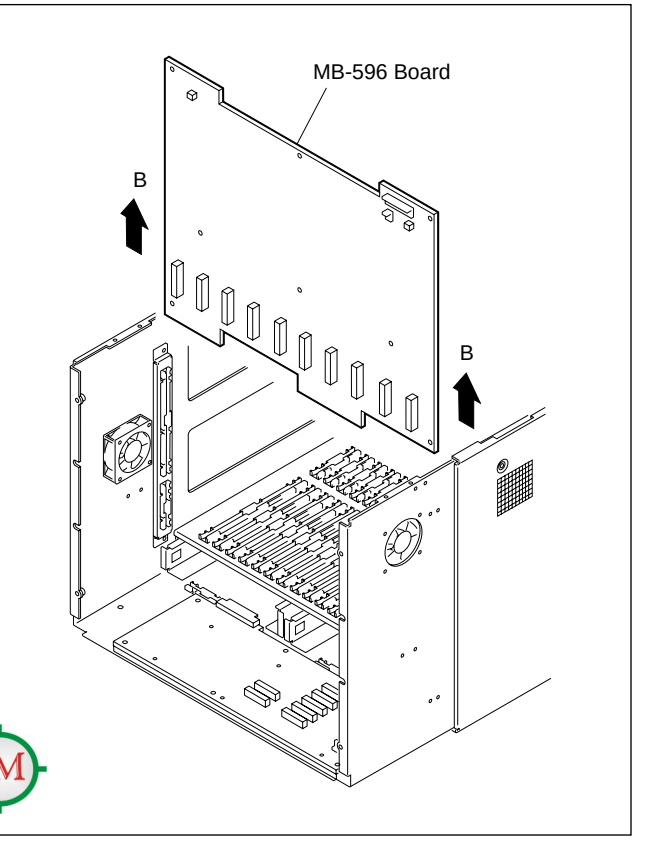


4. Unscrew the four +/−BW screws. (Refer to section 2-2. Removal of Cabinet.)



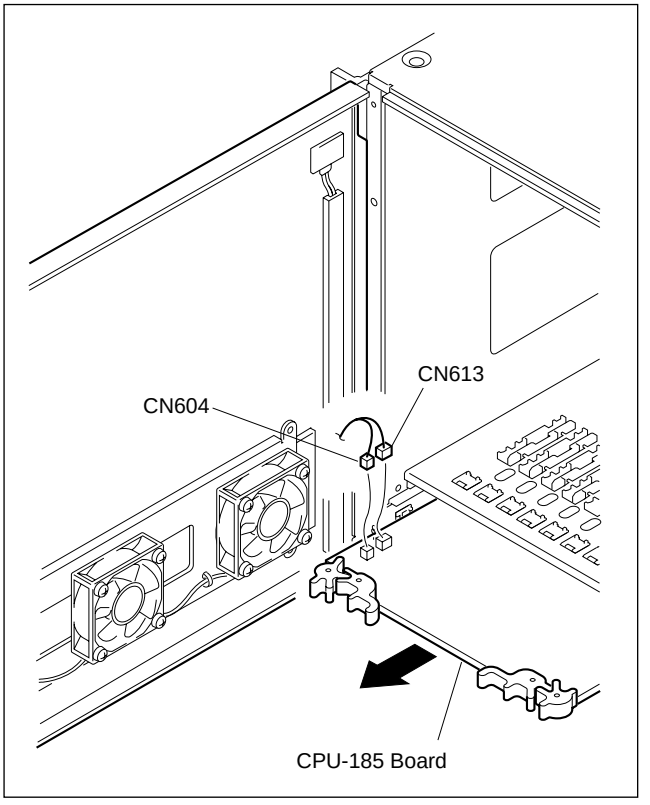
5. Pull out the main chassis in direction A.
6. Unscrew the three screws (a) (BVTT3×8).
7. Unscrew the four screws (PSW3×6), and then remove the MB reinforcement (A) and (B).

8. Pull out the MB-596 Board in direction B.

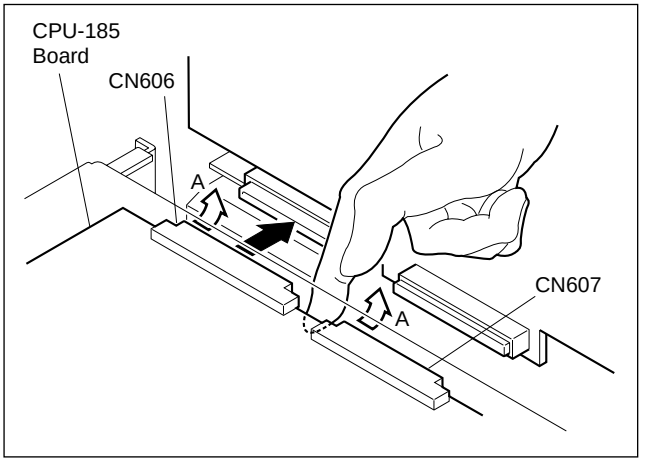


2-3-5. CPU-185 Board

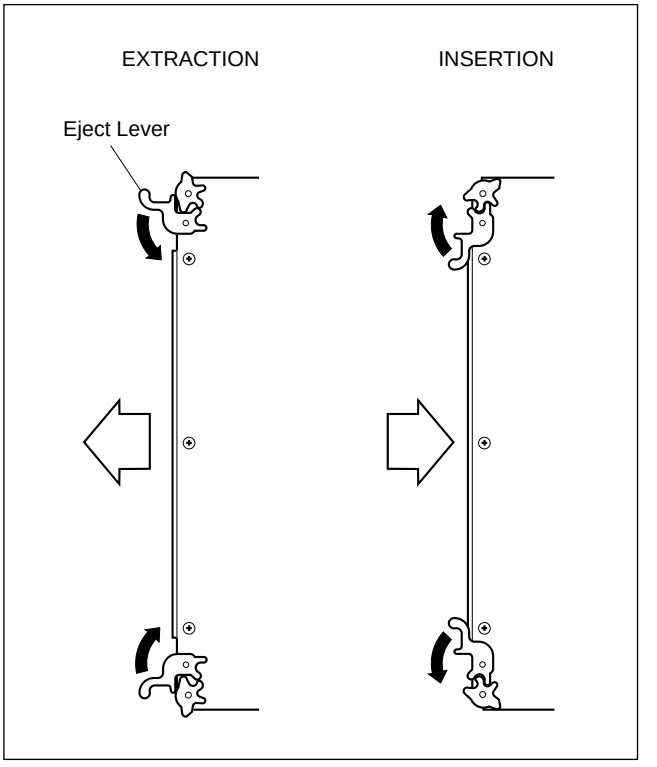
1. Open the front panel, pull out the CPU-185 board in the arrow direction slightly, disconnect the two connectors (CN604, CN613), and pull out the CPU-185 Board.



Note : Insert the CPU-185 board first. While lifting slightly in direction A, as shown in the figure, connect the two connectors on the CPU-185 and MB-596 boards by pushing forward. Check to be sure that the connection is firm, and lock the levers of the CPU-185 board.



2-3-6. Plug-in Board Extraction and Insertion



Plug-in board Extraction

Pull up the eject levers on the plug-in board in the arrow direction, pull out the boards from the MB-596 board connectors

Plug-in Board Insertion

Insert the plug-in board by pushing its eject levers forward, as shown in the figure. Pull up the eject levers in the arrow direction to connect firmly the connectors on the plug-in board and the MB-596 board.

Note : Check the position of the connector on the plug-in board first, before inserting the plug-in board.

2-4. REPLACEMENT OF PARTS

2-4-1. Notes on Spare Parts

(1) Safety Related Components Warning
Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

(2) Standardization of Parts
Spare parts supplied from Sony Parts Center may not be always identical with the parts which actually in use due to “accommodating the improved parts and/or engineering changes” or “standardization of genuine parts”.
This manual's exploded views and electrical spare parts list are indicating the part numbers of “the standardized genuine parts at present”.

(3) Stock of Parts
Parts marked with “o” SP (Supply Code) column of the spare parts list are not normally required for routine service work. Orders for parts marked with “o” will be processed, but allow for additional delivery time.

(4) Units for Capacitors, Inductors and Resistors
The following units are assumed in schematic diagrams, electrical parts list and exploded views unless otherwise specified.

Capacitors : μF
Inductors : μH
Resistors : Ω

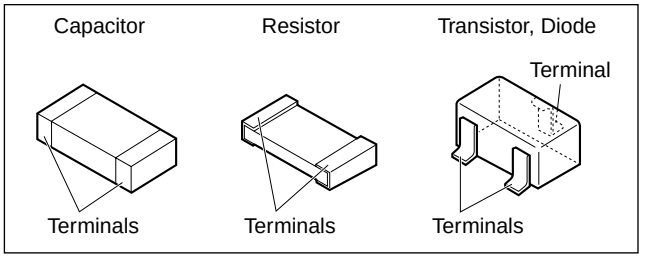
2-4-2. Replacement of Chip Parts

Required Tools

Soldering iron : 20 W
If possible, use a soldering-iron tip heatcontroller set to 270 ± 10 ˚C.
Braided wire : Solder Taul or equivalent
Sony part No. 7-641-300-81
Solder : 0.6 mm dia. is recommended.
Tweezers

Soldering Conditions

Soldering iron temperature : 270 ± 10 ˚C
Soldering time : Less than 2 seconds per pin



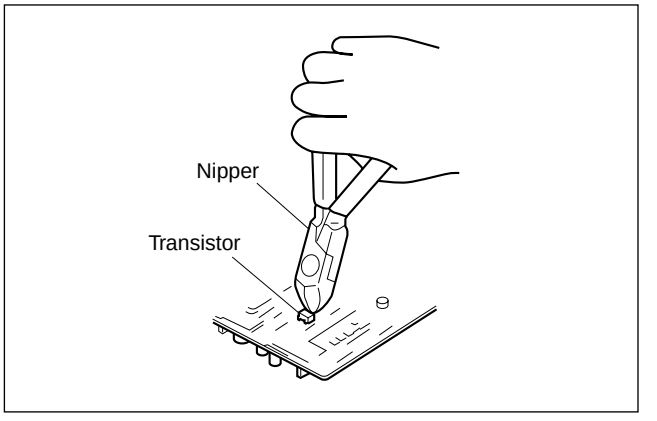
Replacement of Resistor and Capacitor

1. Place the soldering-iron tip onto the chip part and heat it up until the solder is melted. When the solder is melted, slide the chip part aside.
2. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering position.
3. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
4. Place new chip part in the desired position and solder both ends.

NOTE Do not use a chip part again once it has been removed.

Replacement of Transistors and Diodes

1. Cut the terminals of the chip part with nippers.
2. Remove the cut leads with soldering iron as above.
3. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering positions.
4. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
5. Place new chip part in the desired position and solder the terminals.



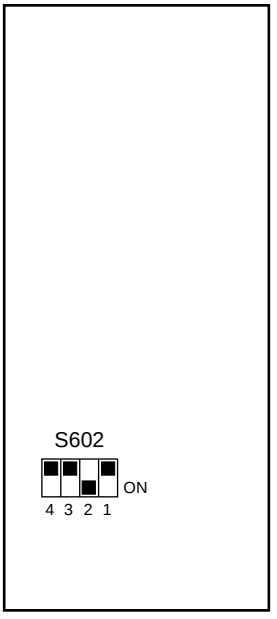
Replacement of ICs

1. Using the braided wire, “SOLDER TAUL” (Sony Part No. 7-641-300-81), remove the solder around the pins of the IC-chip to be removed.
2. While heating up the pins, remove the pins one by one using sharp-pointed tweezers.
3. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering position.
4. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
5. Place new chip part in the desired position and solder the pins.

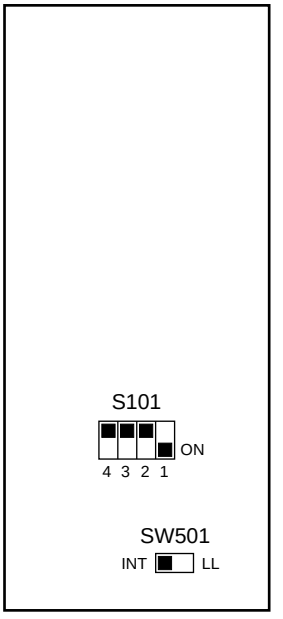
2-5. INITIAL SETTINGS OF SWITCHES

2-5-1. CSP-5000E

CPU-185 Board
A side

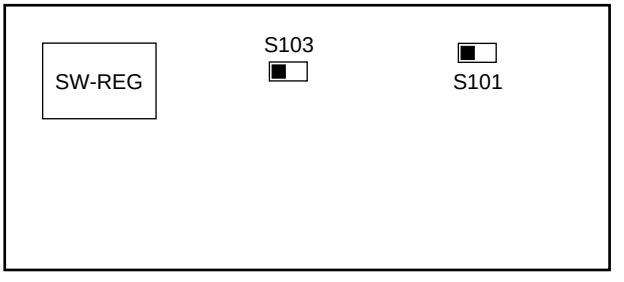


CT-156 Board
A side



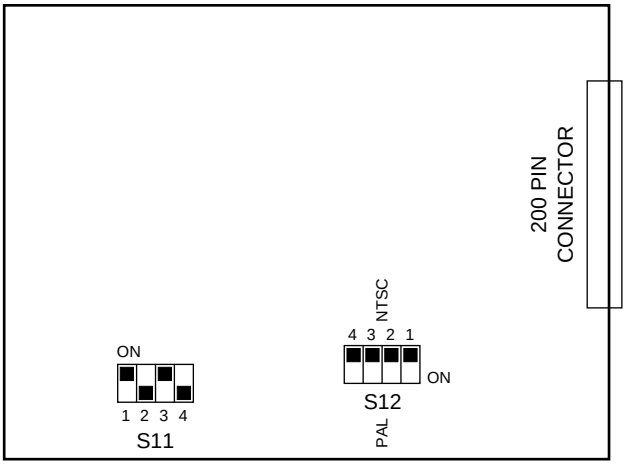
2-5-2. CSPK-5000E

SY-211 Board
A side



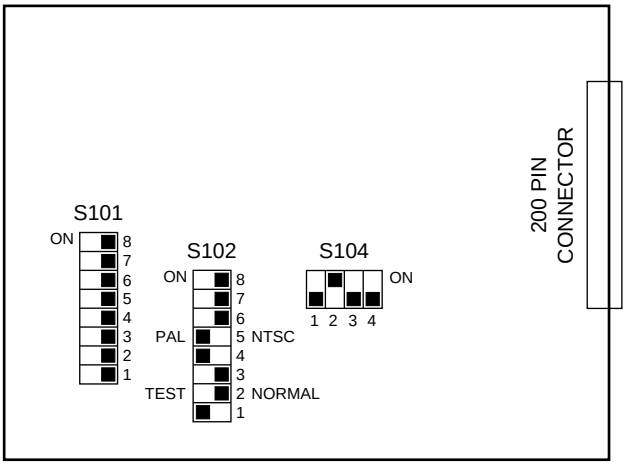
2-5-3. CSPB-510VC

IPM-77 Board
A side



2-5-4. CSPB-520VC

OPM-11 Board
A side



2-6. TOOL

Extension Board, EXP-11

Sony part No.: J-6431-350-A
This is used to inspect and adjust the IPM-77 and OPM-11 boards.

Extension Board, EXP-156

Sony part No.: J-6431-360-A
This is used to inspect and adjust the CT-156 board.

Extension Board, EXP-185

Sony part No.: J-6431-370-A
This is used to inspect and adjust the CPU-185 board.

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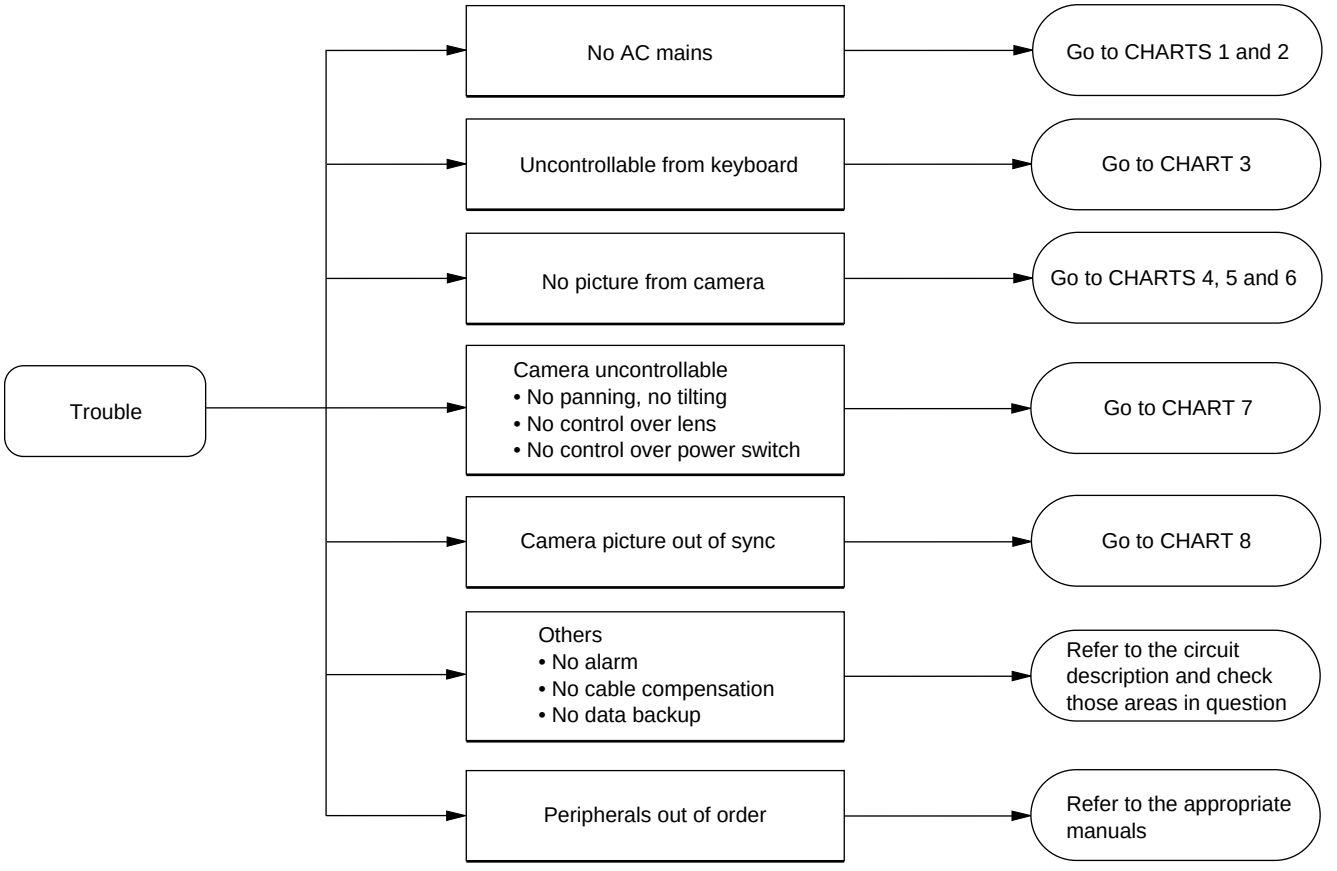
SECTION 3
TROUBLESHOOTING

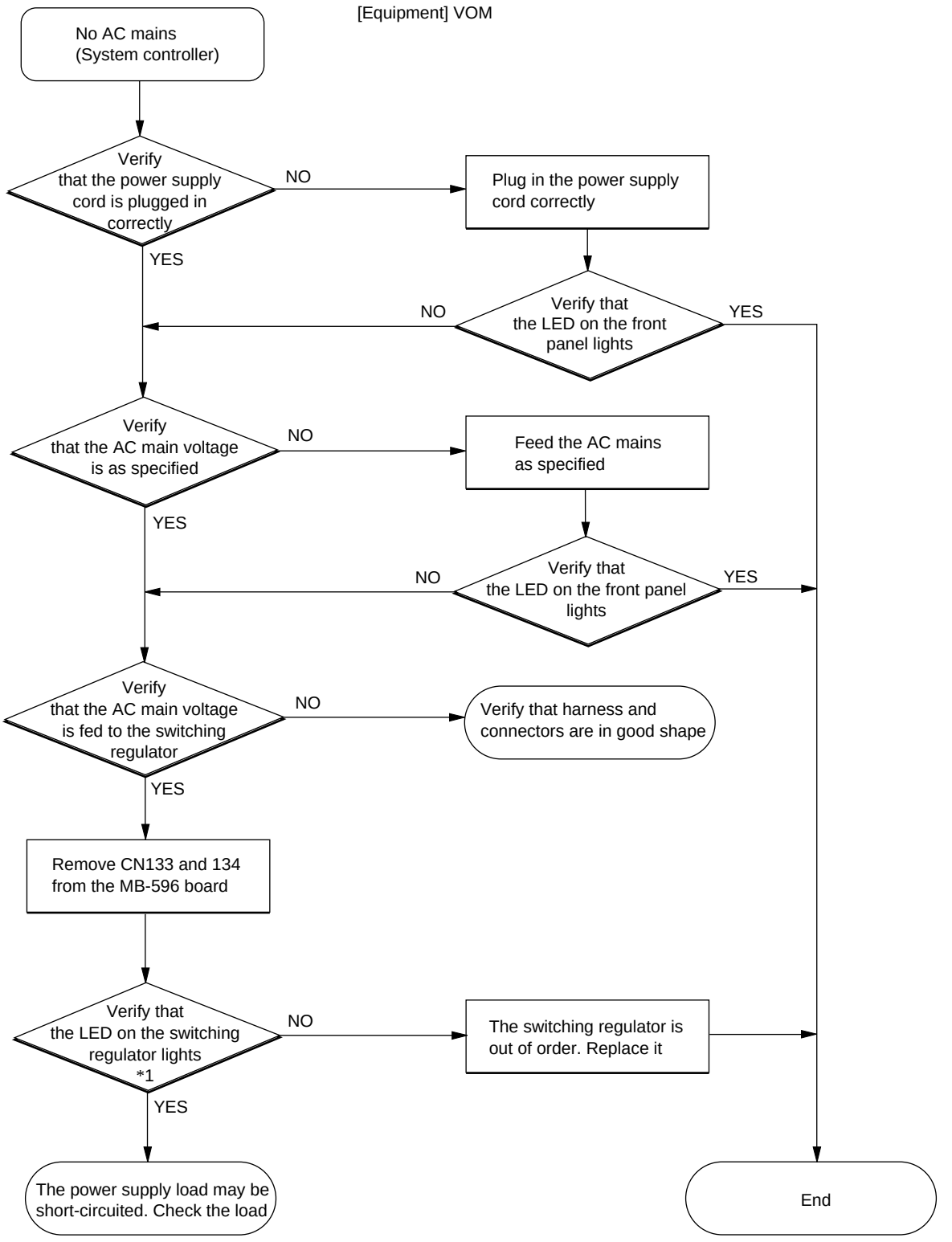
This section introduces how to locate the causes of problems and how to cope with those which may occur during system operation.

Precautions
Make sure that the system setting is appropriate and complete as described in the instruction manuals. Malfunction often occurs simply because of wrong settings.

FLOWCHART

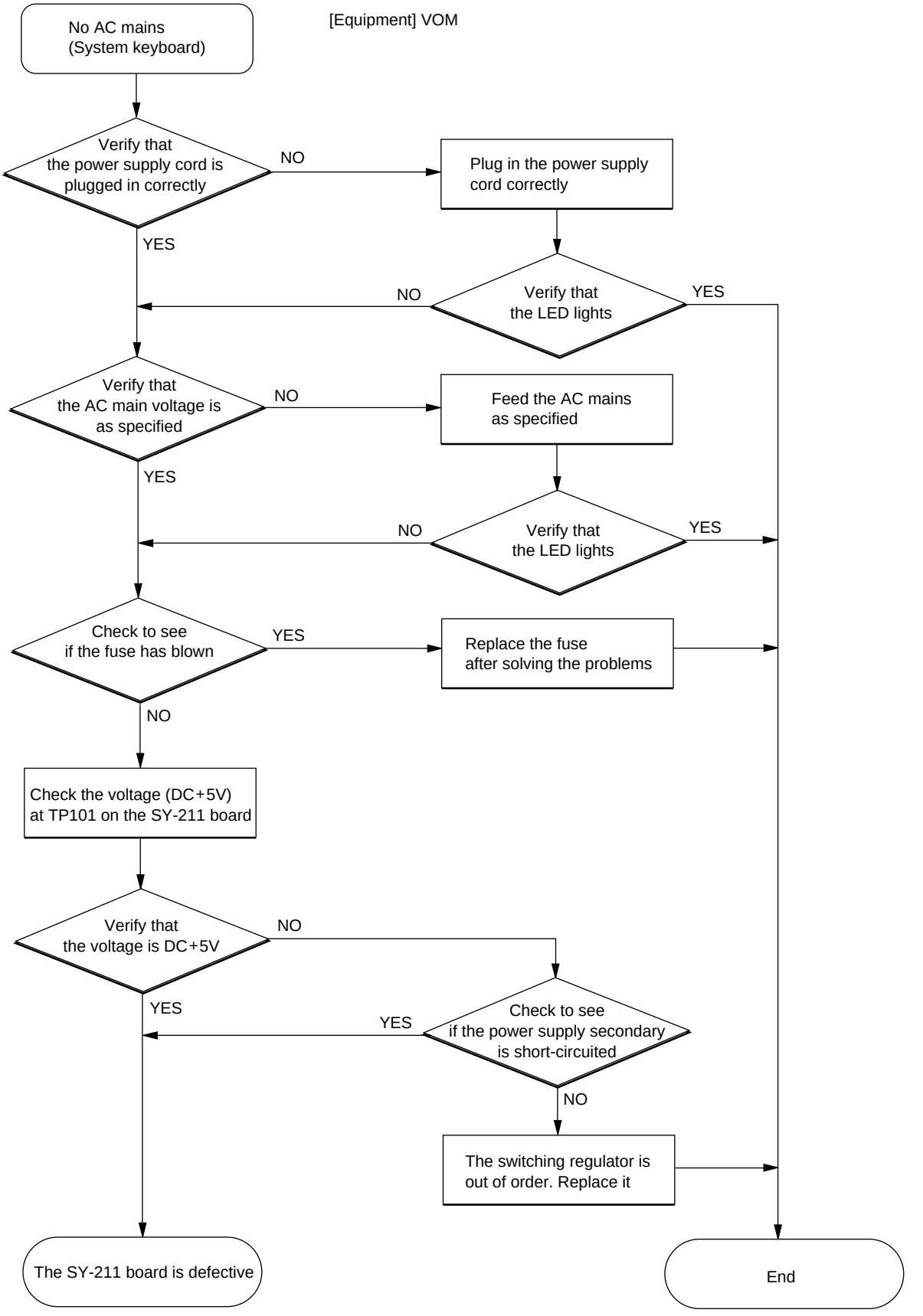

Trouble
No AC mains
Go to CHARTS 1 and 2
Uncontrollable from keyboard
Go to CHART 3
No picture from camera
Go to CHARTS 4, 5 and 6
Camera uncontrollable
• No panning, no tilting
• No control over lens
• No control over power switch
Go to CHART 7
Camera picture out of sync
Go to CHART 8
Others
• No alarm
• No cable compensation
• No data backup
Refer to the circuit description and check those areas in question
Peripherals out of order
Refer to the appropriate manuals

[CHART 1]



***1 Be sure to check the two switching regulators**

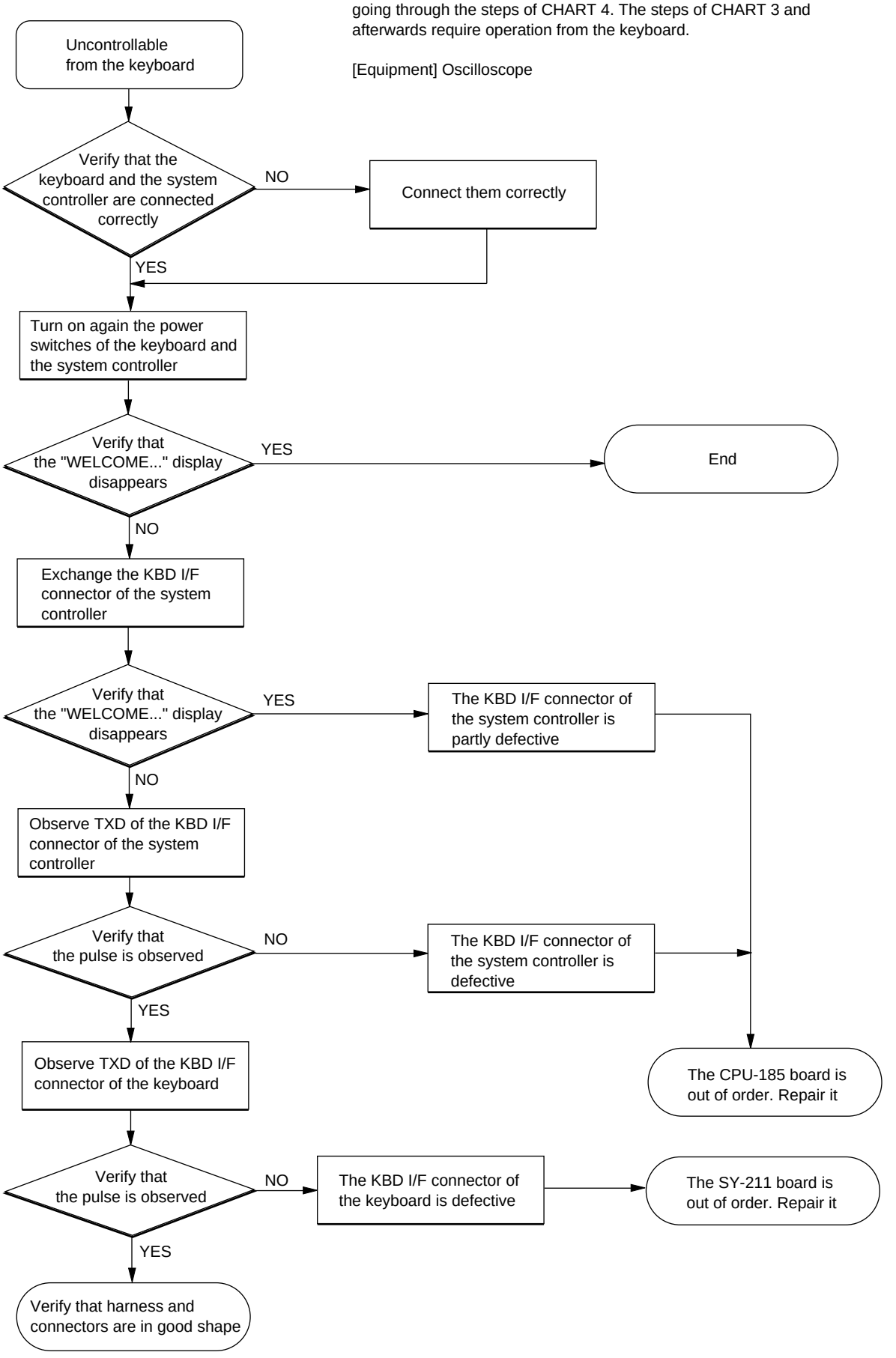
[CHART 2]


No AC mains
(System keyboard)
[Equipment] VOM
Verify that
the power supply cord is
plugged in correctly
NO
Plug in the power supply
cord correctly
YES
NO
Verify that
the LED lights
YES
Verify that
the AC main voltage is
as specified
NO
Feed the AC mains
as specified
YES
NO
Verify that
the LED lights
YES
Check to see
if the fuse has blown
YES
Replace the fuse
after solving the problems
NO
Check the voltage (DC+5V)
at TP101 on the SY-211 board
Verify that
the voltage is DC+5V
NO
YES
YES
Check to see
if the power supply secondary
is short-circuited
NO
The switching regulator is
out of order. Replace it
The SY-211 board is defective
End

[CHART 3]

Make sure that you can operate the system from the keyboard by going through the steps of CHART 4. The steps of CHART 3 and afterwards require operation from the keyboard.

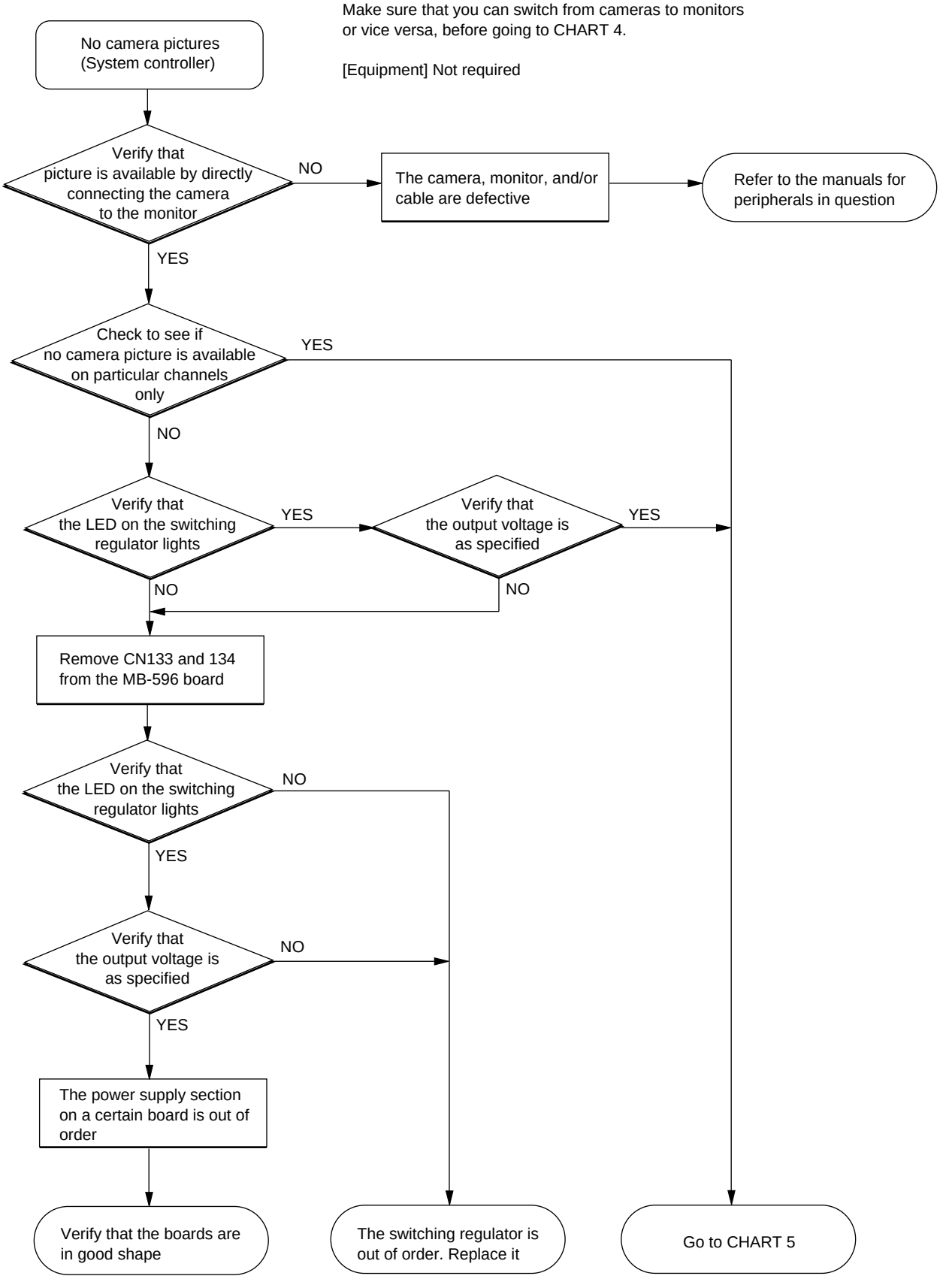
[Equipment] Oscilloscope


Uncontrollable from the keyboard
Verify that the keyboard and the system controller are connected correctly
NO
Connect them correctly
YES
Turn on again the power switches of the keyboard and the system controller
Verify that the "WELCOME..." display disappears
YES
End
NO
Exchange the KBD I/F connector of the system controller
Verify that the "WELCOME..." display disappears
YES
The KBD I/F connector of the system controller is partly defective
NO
Observe TXD of the KBD I/F connector of the system controller
Verify that the pulse is observed
NO
The KBD I/F connector of the system controller is defective
YES
Observe TXD of the KBD I/F connector of the keyboard
The CPU-185 board is out of order. Repair it
Verify that the pulse is observed
NO
The KBD I/F connector of the keyboard is defective
The SY-211 board is out of order. Repair it
YES
Verify that harness and connectors are in good shape

[CHART 4]

Make sure that you can switch from cameras to monitors or vice versa, before going to CHART 4.

[Equipment] Not required

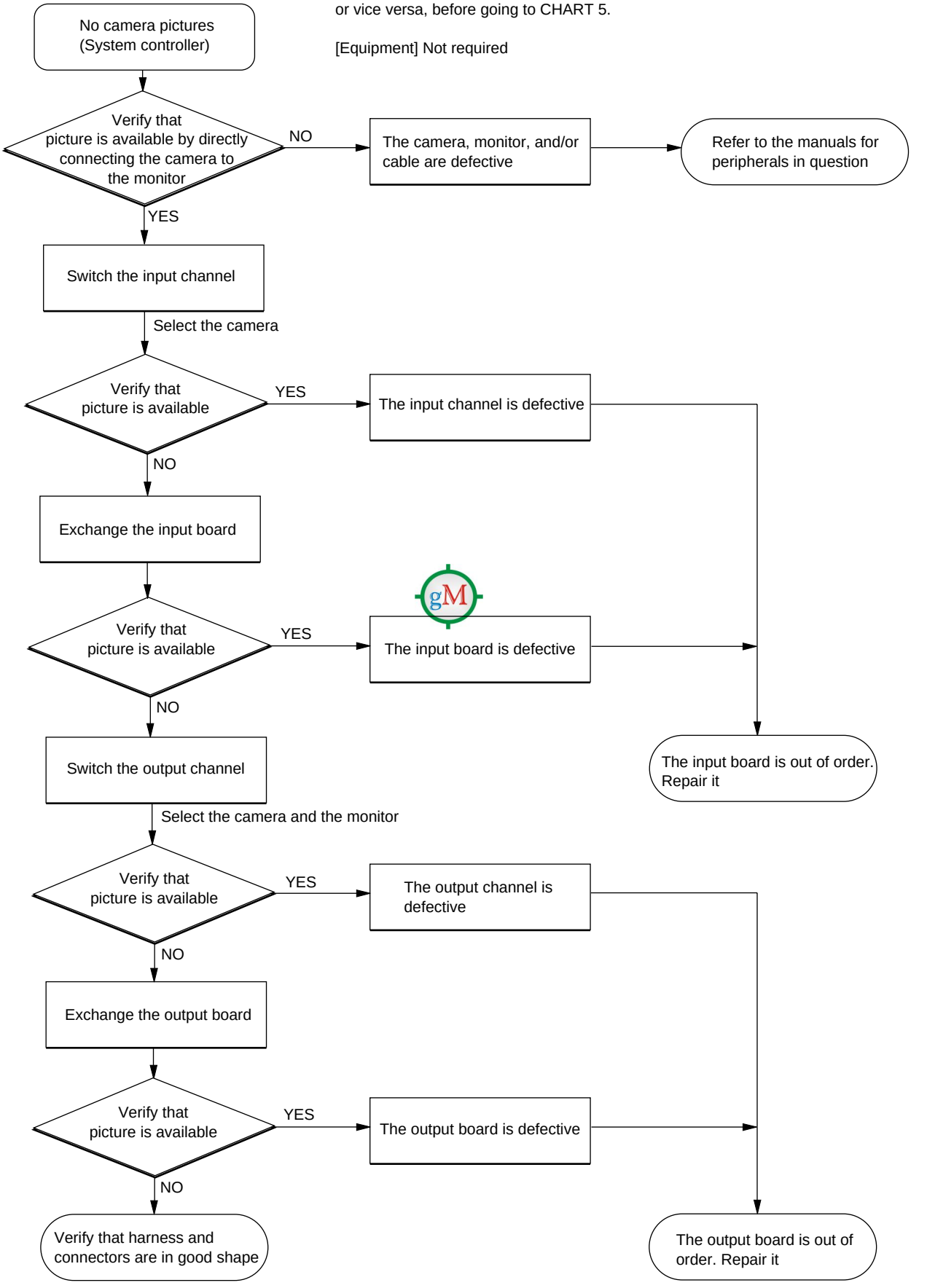

No camera pictures (System controller)
Verify that picture is available by directly connecting the camera to the monitor
NO
The camera, monitor, and/or cable are defective
Refer to the manuals for peripherals in question
YES
Check to see if no camera picture is available on particular channels only
YES
NO
Verify that the LED on the switching regulator lights
YES
Verify that the output voltage is as specified
YES
NO
NO
Remove CN133 and 134 from the MB-596 board
Verify that the LED on the switching regulator lights
NO
YES
Verify that the output voltage is as specified
NO
YES
The power supply section on a certain board is out of order
Verify that the boards are in good shape
The switching regulator is out of order. Replace it
Go to CHART 5

*** If only one switching regulator is out of order, the system produces irregular camera pictures and does not result in "no AC mains" symptom.**

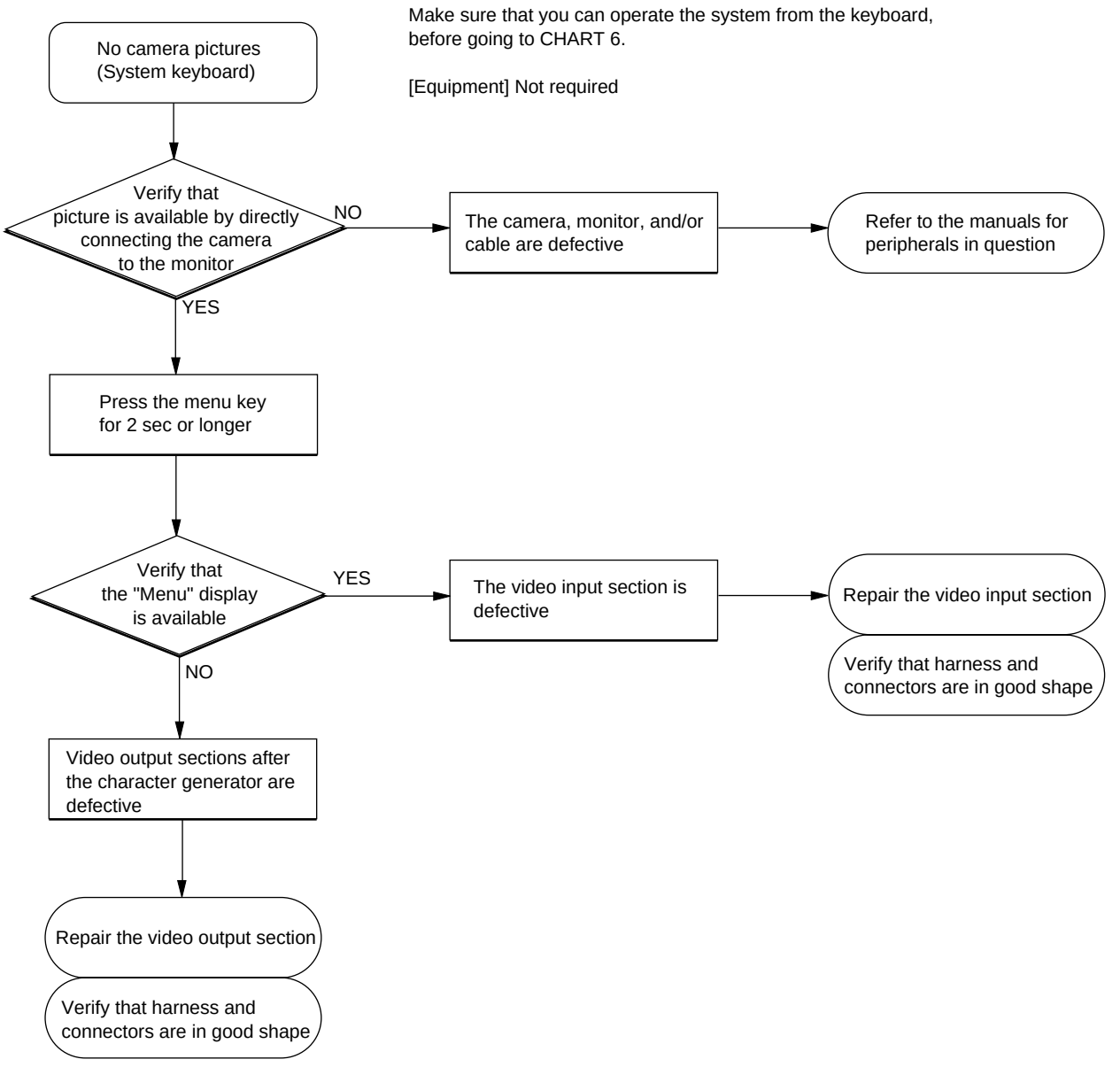
[CHART 5]

Make sure that you can switch from cameras to monitors or vice versa, before going to CHART 5.

[Equipment] Not required


No camera pictures (System controller)
Verify that picture is available by directly connecting the camera to the monitor
NO
The camera, monitor, and/or cable are defective
Refer to the manuals for peripherals in question
YES
Switch the input channel
Select the camera
Verify that picture is available
YES
The input channel is defective
NO
Exchange the input board
Verify that picture is available
YES
The input board is defective
NO
The input board is out of order. Repair it
Switch the output channel
Select the camera and the monitor
Verify that picture is available
YES
The output channel is defective
NO
Exchange the output board
Verify that picture is available
YES
The output board is defective
NO
Verify that harness and connectors are in good shape
The output board is out of order. Repair it

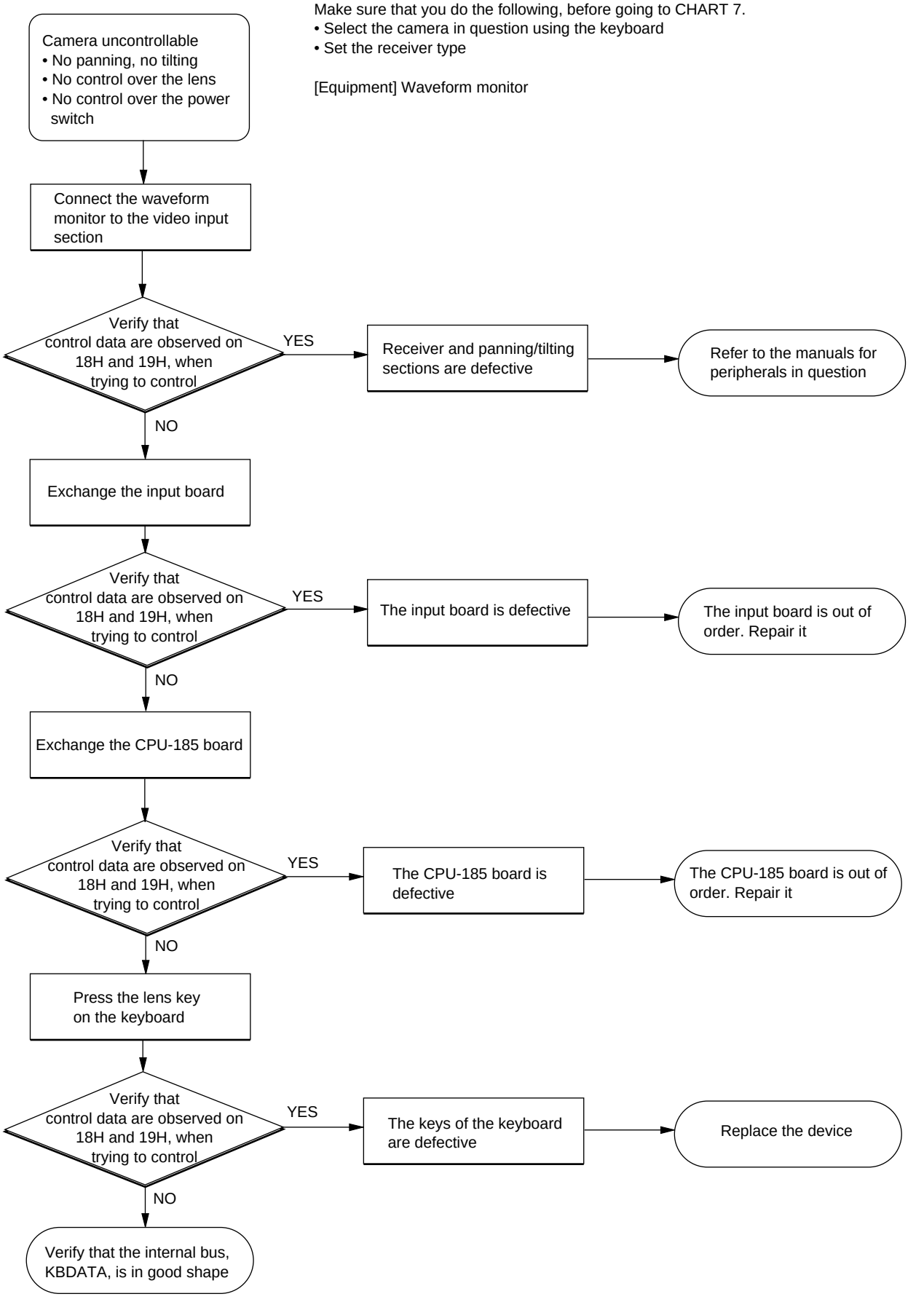
[CHART 6]


Make sure that you can operate the system from the keyboard, before going to CHART 6.
[Equipment] Not required
No camera pictures (System keyboard)
Verify that picture is available by directly connecting the camera to the monitor
NO
The camera, monitor, and/or cable are defective
Refer to the manuals for peripherals in question
YES
Press the menu key for 2 sec or longer
Verify that the "Menu" display is available
YES
The video input section is defective
Repair the video input section
Verify that harness and connectors are in good shape
NO
Video output sections after the character generator are defective
Repair the video output section
Verify that harness and connectors are in good shape

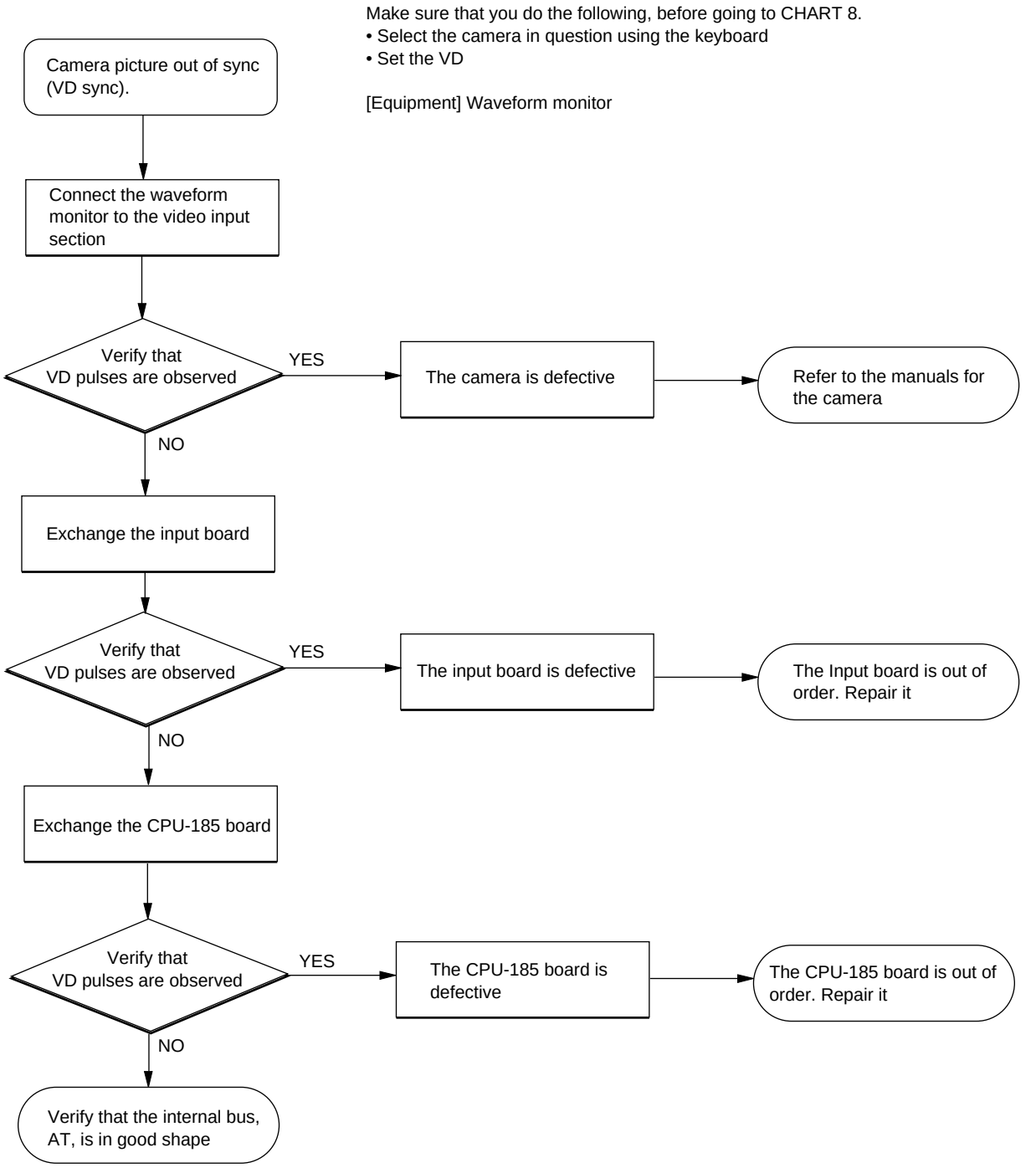
[CHART 7]

Make sure that you do the following, before going to CHART 7.
- Select the camera in question using the keyboard
- Set the receiver type

[Equipment] Waveform monitor


Camera uncontrollable
• No panning, no tilting
• No control over the lens
• No control over the power switch
Connect the waveform monitor to the video input section
Verify that control data are observed on 18H and 19H, when trying to control
YES
Receiver and panning/tilting sections are defective
Refer to the manuals for peripherals in question
NO
Exchange the input board
Verify that control data are observed on 18H and 19H, when trying to control
YES
The input board is defective
The input board is out of order. Repair it
NO
Exchange the CPU-185 board
Verify that control data are observed on 18H and 19H, when trying to control
YES
The CPU-185 board is defective
The CPU-185 board is out of order. Repair it
NO
Press the lens key on the keyboard
Verify that control data are observed on 18H and 19H, when trying to control
YES
The keys of the keyboard are defective
Replace the device
NO
Verify that the internal bus, KBDATA, is in good shape

[CHART 8]


Make sure that you do the following, before going to CHART 8.
• Select the camera in question using the keyboard
• Set the VD
[Equipment] Waveform monitor
Camera picture out of sync (VD sync).
Connect the waveform monitor to the video input section
Verify that VD pulses are observed
YES
The camera is defective
Refer to the manuals for the camera
NO
Exchange the input board
Verify that VD pulses are observed
YES
The input board is defective
The Input board is out of order. Repair it
NO
Exchange the CPU-185 board
Verify that VD pulses are observed
YES
The CPU-185 board is defective
The CPU-185 board is out of order. Repair it
NO
Verify that the internal bus, AT, is in good shape

*** In case of the line-lock system or the VS sync, the sync between cameras is established by themselves.**
*** Camera is switched during the V-blanking period by synchronizing the system controller with the camera.**
*** Use the SYNC IN/OUT terminal when synchronizing the system controller with the camera.**
*** Repair the CT-156 board when the sync circuit of the system controller is defective.**

SECTION 4
ELECTRICAL ALIGNMENT

4-1. TEST EQUIPMENT AND TOOLS

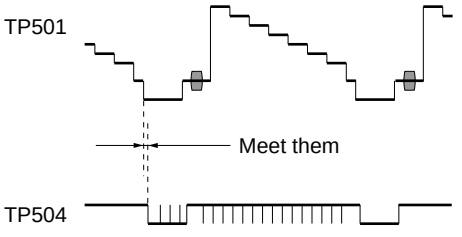
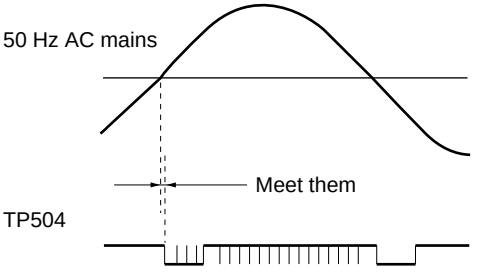
[Test Equipment]

Signal generator (Color-bar)
Digital voltmeter
Oscilloscope
Monitor TV

[Tools]

Extension board for CT-156, model EXP-156	Sony Part No. J-6431-360-A
Extension board for OPM-11, model EXP-11	Sony Part No. J-6431-350-A

4-2. CT-156 BOARD (CSP-5000E) ALIGNMENT

Machine conditions for adjustment	Specifications	Adjustments
Preparations 1. Set the dip switches as follows (Re-setting only) SW501: INT S101(1): ON 2. Install the CT-156 extension board, EXP-156.		
PLL Adjustment of Sync signals 1. Feed color-bar signals into EXT SYNC IN. 2. Connect a digital voltmeter to TP503 (PLL)	DC1.9V±0.1V	⊘ CT501
Phase Adjustment of Sync signals (INT) 1. Feed color-bar signals into EXT SYNC IN. 2. Connect an oscilloscope as follows: CH1: TP501 (VS) CH2: TP504 (C. SYNC)	Adjust the phase as shown. 	⊘ RV502
Phase Adjustment of Sync signals (LL) 1. Operate the CSP-5000E on AC 50Hz mains. 2. Set SW501 to LL 3. Disconnect input, if any, from EXT SYNC IN. 4. Connect an oscilloscope as follows: CH1: 50Hz AC mains CH2: TP504 (C. SYNC) **Note: Make sure that ground connections to the AC mains, the oscilloscope, and the unit are appropriate.**	Adjust the phase as shown. 	⊘ RV501

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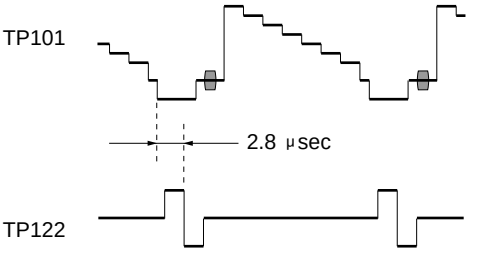
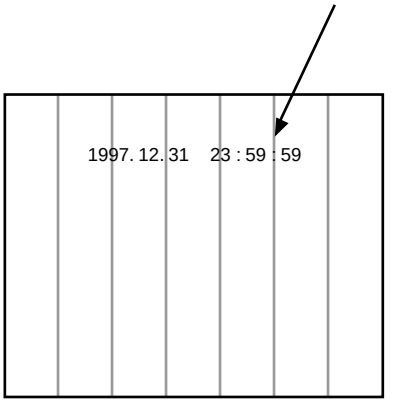
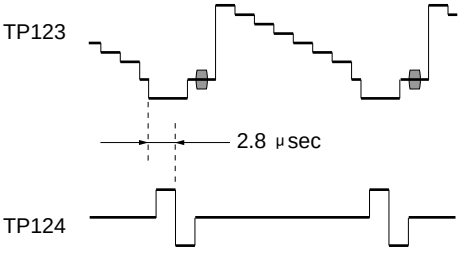
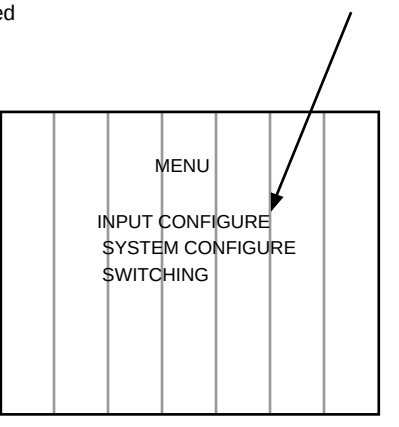
4-3. OPM-11 BOARD (CSP-5000E/CSPB-520VC) ALIGNMENT

<table>
<tr><th>Machine conditions for adjustment</th><th>Specifications</th><th>Adjustments</th></tr>
<tr><td colspan="3">Preparations
1. Set the dip switches as follows (Re-setting only)
S102(1,4): ON
S102(5): PAL
S104(2): ON
2. Select the channel group (slot) (In case of ch 1 - ch 8)
Select channels 1 through 8 (slot 1) using jumper pins. (See the chart on the next page)
CN105 - CN112
⇩ ⇩
VB1 VB8
Install the OPM-11 extension board, EXP-11 in slot 1.
3. Perform the PLL adjustment of the character generator (See below) for each of the channels (ch 1 - ch 8). Then, repeat the same adjustments as above for the other channel groups (slots), if required.
4. Perform the size adjustment of the character generator (See below) for each of the channels (ch 1 - ch 8). Then, repeat the same adjustments as above for the other channel groups (slots), if required.</td></tr>
<tr><td>PLL Adjustment of Character Generator
1. Feed color-bar signals into the video (camera) IN, and select it using the keyboard.
2. Connect a monitor TV to ch 1.
3. Connect an oscilloscope as follows:
CH1: TP101
CH2: TP122
4. Similarly, repeat the adjustments for ch 2 through ch 8. The appropriate test points and variable resistors are shown in the following chart.
5. Repeat the adjustments for the other channel groups (slots), if required. VB changes as shown in the following chart.</td><td>Adjust the phase as shown.
 
</td><td>⊘ RV101</td></tr>
<tr><td>Size Adjustment of Character Generator
1. Set S102(2) to TEST.
2. Press the S103 RESET.
3. Feed color-bar signals into the video (camera) IN, and select it using the keyboard.
4. Connect a monitor TV to ch 1.
5. Similarly, repeat the adjustments for ch 2 through ch 8. The appropriate trimmer capacitors are shown in the following chart.
6. Repeat the adjustments for the other channel groups (slots), if required. VB changes as shown in the following chart.
7. Upon completion, return the S102 (2) to NORMAL.</td><td>Adjust the character (colon) position as shown.
Bring the colon onto the line between magenta and red
 
</td><td>⊘ CV101</td></tr>
</table>

	Jumper Pins							
	CN105	**CN106**	**CN107**	**CN108**	**CN109**	**CN110**	**CN111**	**CN112**
ch1-8 Slot 1	VB1	VB2	VB3	VB4	VB5	VB6	VB7	VB8
ch9-16 Slot 2	VB9	VB10	VB11	VB12	VB13	VB14	VB15	VB16
ch17-24 Slot 3	VB17	VB18	VB19	VB20	VB21	VB22	VB23	VB24
ch25-32 Slot 4	VB25	VB26	VB27	VB28	VB29	VB30	VB31	VB32

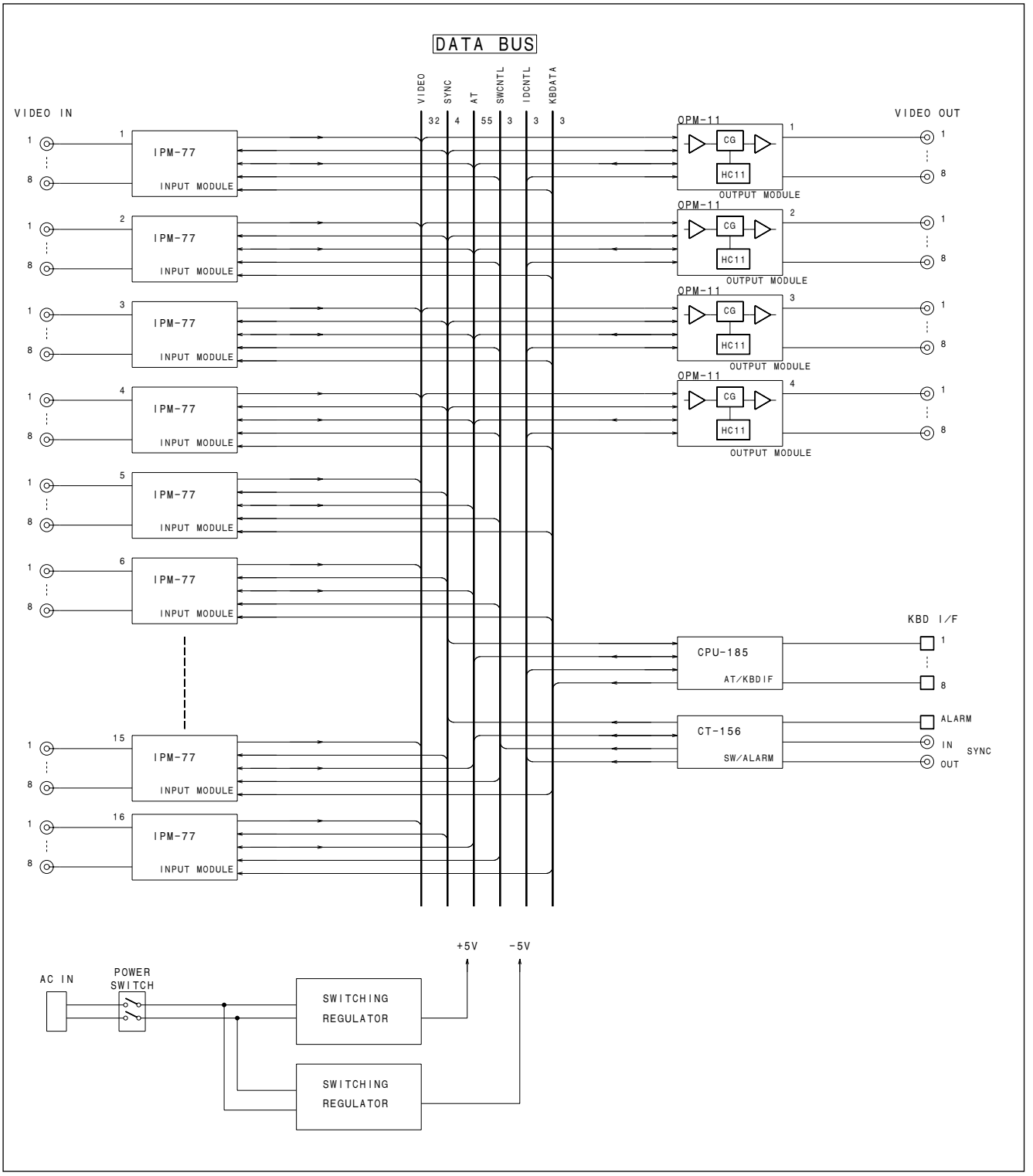
ch	**ch1,9, 17,25**	**ch2,10, 18,26**	**ch3,11, 19,27**	**ch4,12, 20,28**	**ch5,13, 21,29**	**ch6,14, 22,30**	**ch7,15, 23,31**	**ch8,16, 24,32**
TP	TP101	TP103	TP110	TP112	TP114	TP116	TP118	TP120
	TP122	TP134	TP144	TP154	TP164	TP176	TP186	TP196
RV	RV101	RV104	RV107	RV110	RV113	RV116	RV119	RV122
CV	CV101	CV103	CV105	CV107	CV109	CV111	CV113	CV115

4-4. SY-211 BOARD (CSPK-5000E) ALIGNMENT

Machine conditions for adjustment	Specifications	Adjustments
Preparations 1. Set the dip switches as follows (Re-setting only) S101: left position S103: left position		
Balance Adjustment of JOYBALL 1. Turn the power switch of the keyboard on. 2. Connect a digital voltmeter to TP136. 3. Connect a digital voltmeter to TP137.	 DC2.5V ± 0.1V DC2.5V ± 0.1V	 ⊘ RV104 ⊘ RV105
PLL Adjustment of Character Generator 1. Feed color-bar signals into the video (camera) IN, and select it using the keyboard. 2. Press the menu key for 2 sec or longer to display the menu on the monitor. 3. Connect an oscilloscope as follows: CH1: TP123 CH2: TP124	Adjust the phase as shown.  	⊘ RV101
Size Adjustment of Character Generator 1. Feed color-bar signals into the video (camera) IN, and select it using the keyboard. 2. Press the menu key for 2 sec or longer to display the menu on the monitor.	Adjust the character (E) position as shown. Bring the E's right edge onto the line between magenta and red  	⊘ CV101

SECTION 5
CIRCUIT DESCRIPTION AND BLOCK DIAGRAMS

SYSTEM CONTROLLER MODEL CSP-5000E



Refer to the block diagrams and Section 8 schematic diagrams (Vol. 2).

SYSTEM CONTROLLER MODEL CSP-5000E

Structure

System controller, model CSP-5000E consists of the following:

Power Supply Section
The power supply section consists of a switching regulator, supplying the system controller with a dc voltage of ±5V.

Main Control Board (CPU-185)
The board consists of two (2) sections.
- The central control section for data communication
- The data processing section for communication with the system keyboard

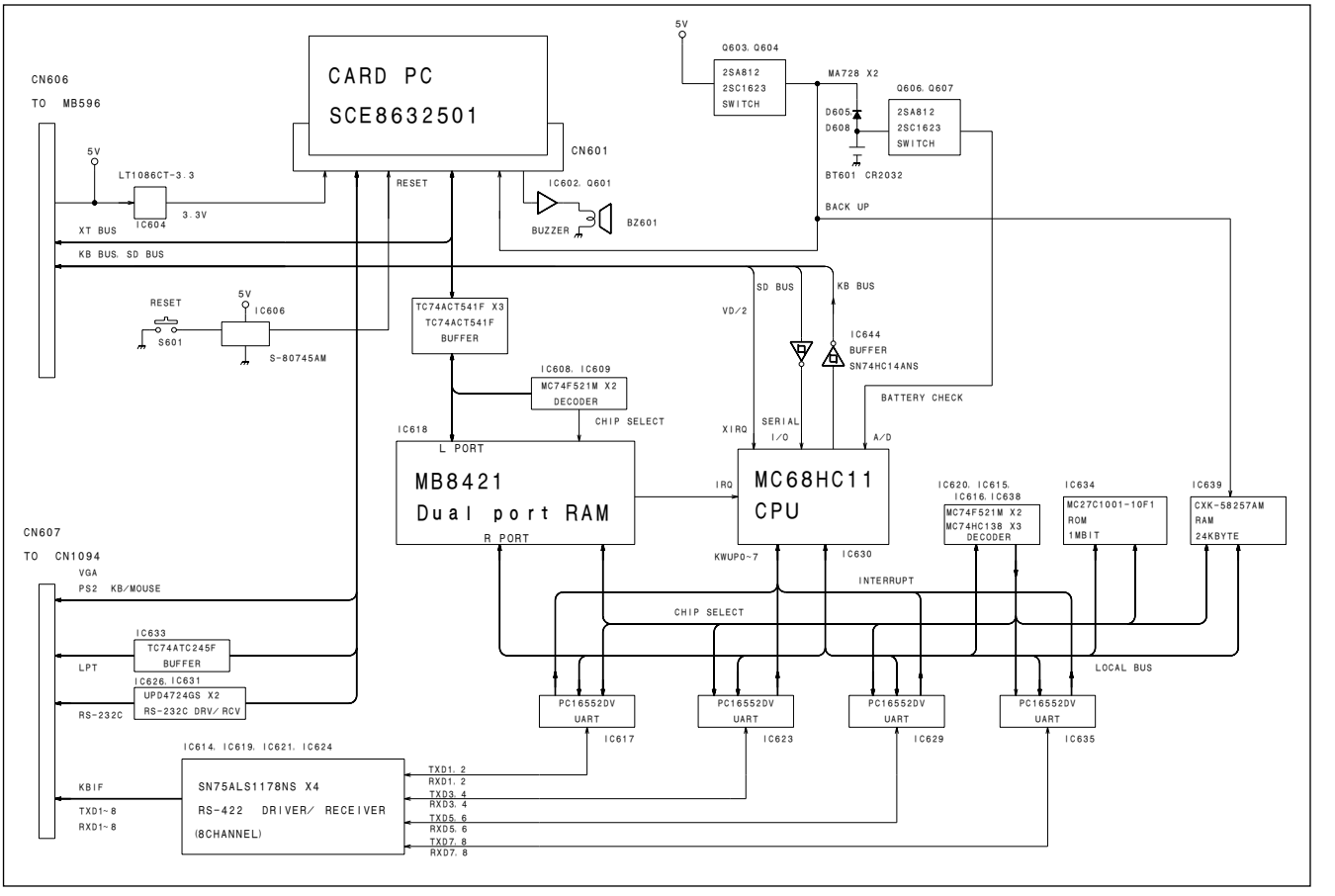
Switch Alarm Control Board (CT-156)
The board consists of three (3) sections.
- The input board switching section operating according to programs
- The switching data producing section which operates based on the alarm input signals.
- The reference signal processing section which serves to synchronize the total system

Input/Output-Board Connector Board
The connector board accommodates the input/output boards (available at option).

Power Supply Relay Board
The board relays AC mains and system control signals. Meanwhile, it produces line-lock signals.

Signal Input/Output Boards
The boards are connector boards for various signals. The signals are VIDEO IN/OUT, ALARM IN/OUT, EXT TIMING IN, KBD I/F, SYNC IN/OUT, RS-232C, PRINTER, VGA, KBD, MOUSE, and so on.

MAIN CONTROL BOARD (CPU-185)



Circuit Description

Main Control Board (CPU-185)

Outline

- The CPU-185 board mainly acts as the central control section for data communication and for the data processing section to communicate with the system keyboard.
- The board consists of the following blocks:

[PC block (AT)]

- This block controls data communication for the total CSP-5000E system and data processing for various system controls.
- It consists of a central unit, the CPU module (card PC) installed in CN601, the RS-232C driver/receiver µ PD4724 (IC626, IC631), the printer buffer TC74ACT245 (IC633), the buzzer (BZ601), the reset/ power supply sensor IC S-80754 (IC606), and the 3.3V power supply regulator LT1086 (IC604).
- This block communicates with Keyboard IF block (KBIF), which is another block on the CPU-185 board, the input board (IPM-77), the output board (OPM-11), and the switch control board (CT), through the PC bus (CN606).
- With S601 on the CPU-185 board depressed, the block resets the total operation of the CSP-5000E by sending the reset control signal to the entire system.
- The card PC installed in the CPU-185 board, is PC/AT compatible. Therefore, the CSP-5000E is equipped with the RS-232C(two lines), the printer port, the PS2 keyboard port, the PS2 mouse port, and the VGA monitor port, as extension connectors. However, they are currently not used.
- The programs for operating the card PC are written in the FLASH ROM in the card PC.

[Keyboard IF Block (KBIF)]

- This block communicates with the system keyboard, model CSPK-5000E, and transfers data into the PC block (AT) or processes data by itself, if required. Similarly, the block communicates with the PC block (AT), and transfers data into the CSPK-5000E or processes data by itself.
- The block consists of a central unit, the 8-bit CPU MC68HC11M0CFU4 (IC630), the dual port RAM MB8421 (IC618), which is used for communication with the PC block (AT), buffers to interconnect with the PC bus, the data communication control IC PC16552DV (IC617, IC623, IC629, IC635), EPROM MC27C1001 (IC634), the data backup RAM CXK-58257 (IC639), the RS-422 driver/receiver SN75ALS1178 (IC614, IC619, IC621, IC624), and decoders for choosing devices.
- The interfaces with the data communication control IC, and with the PC block (AT) are established as priority processing. The data communication control IC sends priority signals to each of the keyboard interfaces, resulting in priority interfaces of eight or less. Those interfaces may handle communication errors as well as sending/receiving data, however, the CPU processes them appropriately. The interface with the PC block (AT) is established by sending to the CPU XIRQ terminal the reversed rise signal of the VD/2, which is in sync with video frames and supplied from the bus through CN606. In other words, the interface begins immediately after the rise signal of the VD/2 is given.
- The CPU (IC630) has the program capacity of 32k bytes, and the program is written in the EPROM (IC634). The EPROM has four program capacities, 32k bytes each, and its bank is selected by the dip switch (S602). For the CPS-5000E, only bank #2 is used; the other banks contain no programs. (S602 #2 is ON, the others OFF)

[Battery backup block]

- This block holds the SRAM (IC639), consisting of the lithium battery CR2032 (BT601), the power supply switch (Q603, Q604), the battery check switch (Q606, Q607), and the reverse current prevention circuit.
- The CPU (IC630) continuously watches the battery power remaining in the lithium battery, and sends its data to the PC block (AT), which in turn sends the CSPK-5000E's LCD commands to indicate a warning when the battery power becomes less than specified.
- The lithium battery holds the setting memory for the card PC and the SRAM (IC639) in which the CSP-5000E's (partial) operation is set.

Operation

[Initialization at start-up time]

- It takes about 10 seconds for the PC block (AT) to complete start-up procedures. When the start-up is completed, PC block (AT) sends data to Keyboard IF Block (KBIF) to let it know of the completion, and at the same time let the buzzer sound so that the operator knows the CSP-5000E is ready for operation. Keyboard IF Block (KBIF) transfers information on the completion to the keyboard.
- PC block (AT) transfers the initial data to the input board (IPM-77), the output board (OPM-11), and Keyboard IF Block (KBIF) as an initialization process for the start-up, according to the backup data stored in SRAM (IC639).
- Keyboard IF Block (KBIF) initializes the data communication control IC (IC617, IC623, IC629, IC635) as an initialization process, and waits for information on completion.

[Circuit performance at non-operation]

- PC block (AT) communicates with the keyboard through Keyboard IF Block (KBIF) at predetermined intervals and watches keyboard performance.

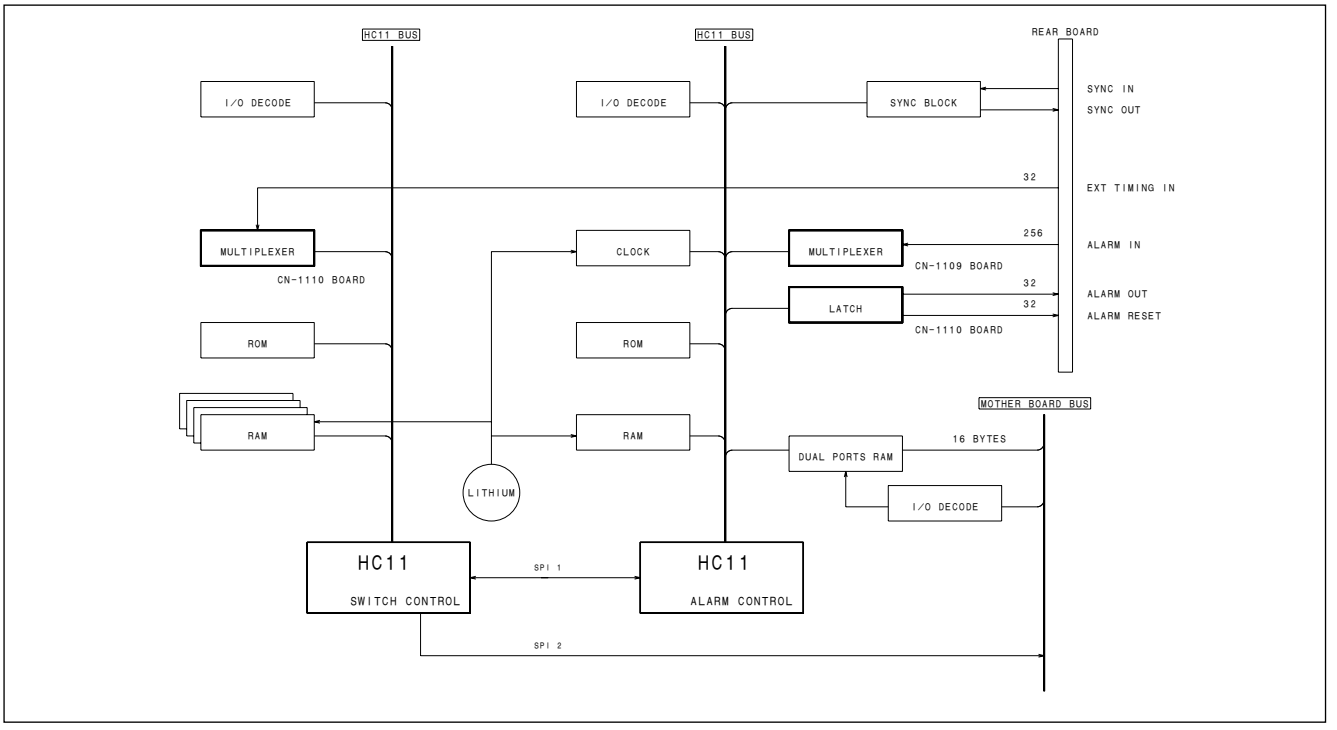
[Data communication with keyboard (Keyboard IF Block (KBIF))]

- When the keyboard is actuated, the keyboard sends commands to the CSP-5000E keyboard port. The data communication control IC (IC617, IC623, IC629, IC635) of Keyboard IF Block (KBIF) sends priority signals to CPU (IC630) each time data of 1 byte are received. When the reception of data row is completed, it sends acknowledgment commands to the keyboard and becomes ready for reception of the following data. It also decodes commands and performs data processing required. The data processing is conducted simultaneously for eight channels available at the keyboard port.
- If reception data are the PTZ command control, Keyboard IF Block (KBIF) sends data to the input board (IPM-77) through the serial I/O KB BUS of CPU. This data transmission occurs during the priority signal processing of VD/2. If reception data are commands for other modules, IF Block (KBIF) sends data to the PC block (AT) through the Dual Port RAM (IC618). Otherwise, Keyboard IF Block (KBIF) processes reception data by itself.
- If Keyboard IF Block (KBIF) receives data from PC block (AT) through the Dual Port RAM (IC618), it transfers them to the keyboard, answers them back to PC block (AT), or processes them within Keyboard IF Block (KBIF), depending on the data received. The data communication control IC (IC617, IC623, IC629, IC635) of Keyboard IF Block (KBIF) sends priority signals to the keyboard each time data of 1 byte are processed, similarly to the data reception.
- The data communication with PC block (AT) is achieved by the data processing of the priority signals (IRQ) that is generated when PC block (AT) writes data in the Dual Port RAM (IC618).
- Keyboard IF Block (KBIF) holds the A/D-converted data on lithium battery's remaining power, and sends them to PC block (AT), if necessary.

[Data communication with modules (PC block (AT))]

- PC block (AT) receives data from such modules as IPM, OPM, KBIF, and CT, processes the data if required, and sends them to the appropriate modules. This data processing is performed at pulse fall time of the VD/2 signal as priority signal processing. At the priority signal processing, PC block (AT) sees if data arrive from the modules, and if any, receives them accordingly. Then, if PC block (AT) needs to send the data to the modules, it does so accordingly.
- Depending on data received, PC block (AT) renews what is written in the back-up SRAM (IC639). The SRAM is located in Keyboard IF Block (KBIF) and PC block (AT) has no direct access to it, and is unable to control the SRAM. PC block (AT), therefore, performs renewal operation by sending SRAM-access commands to Keyboard IF Block (KBIF).
- PC block (AT) watches keyboard performance through Keyboard IF Block (KBIF) at predetermined intervals and, if it fails communicating with the keyboard, resets the menu operation data and the log-on data at the keyboard port.
- PC block (AT) watches power left in the backup battery on Keyboard IF Block (KBIF). When the battery power becomes less than specified, PC block (AT) sends commands to the keyboard through Keyboard IF Block (KBIF) so that the CSPK-5000E's LCD indicates a warning.
- PC block (AT) conducts polling on the multi-picture board when the board is used.
- In addition, PC block (AT) records the histories of communication data with the modules, and analyzes and processes test commands used in the test mode.

SWITCH ALARM CONTROL BOARD (CT-156)



Switch Alarm Control Board (CT-156)

Operation

- The CT-156 board consists of the micro-computer-aided controls and the sync signal generator.

[Switch control block]

- This block controls the following:
  - ① Switch control data
    The board receives data from the micro-computer MC68HC11M0CFU4 (IC113) for controlling switches, and puts them in memory as switch program data. The program data are then, if required, sent back to the micro-computer MC68HC11M0CFU4 (IC113).
  - ② Switching data and camera title data
    The switching data are transferred to the mother bus of the MB-596 board so that the data are processed on the input board. The camera title data are sent to the mother bus as well so that the data are processed on the output board.

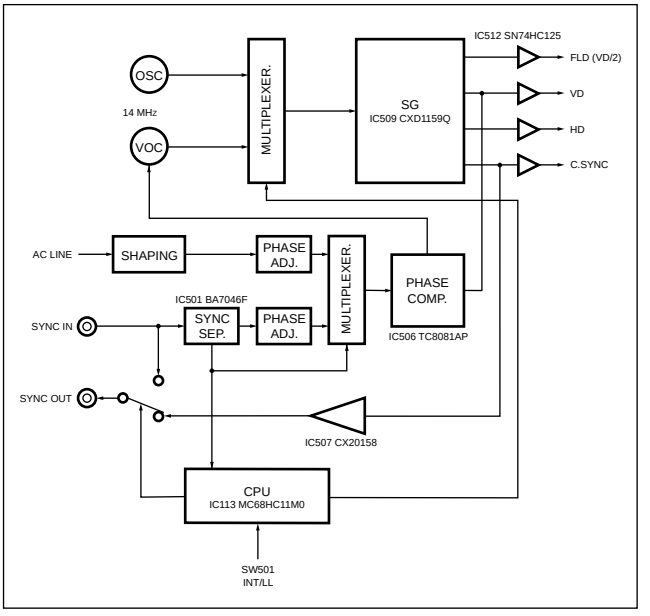
[Alarm control block]

- This block controls the following:
  - ① Data exchange with the keyboard by the dual-port RAM MB8421 (IC101)
    This block receives the data for the alarm and switch controls from the keyboard, and stores them in memory as program data. The data are then, if required, sent back to the keyboard.
  - ② Reading of alarm input signals through the multiplexor on the CN-1109 board.
    This block reads the alarm input signals of up to 256 kinds and processes them according to the program data, resulting in transferring the switching data to the micro-computer MC68HC11M0CFU4 (IC308) and providing the output signals simultaneously. (See item ③)
  - ③ Latching of alarm output signals through the demultiplexor on the CN-1110 board.
    The block provides alarm output signals.
  - ④ Lithium battery power (voltage) check
    The block keeps checking on the power remaining in the lithium battery that holds the SRAM (IC102, IC301). The voltage of the battery is A/D converted and, if the voltage becomes lower than specified, the block sends the keyboard commands to let the operator know the power is limited.
  - ⑤ Clock control
    This block controls the real time clock IC RTC62421A (IC118) for setting and transferring date and time.

[Sync control block]

- The signal generator IC CXD1159Q (IC509) produces composite sync signals.
- This block synchronizes the composite signals with external signals. The block diagram of the sync signal circuit is given below.

SYNC CONTROL BLOCK

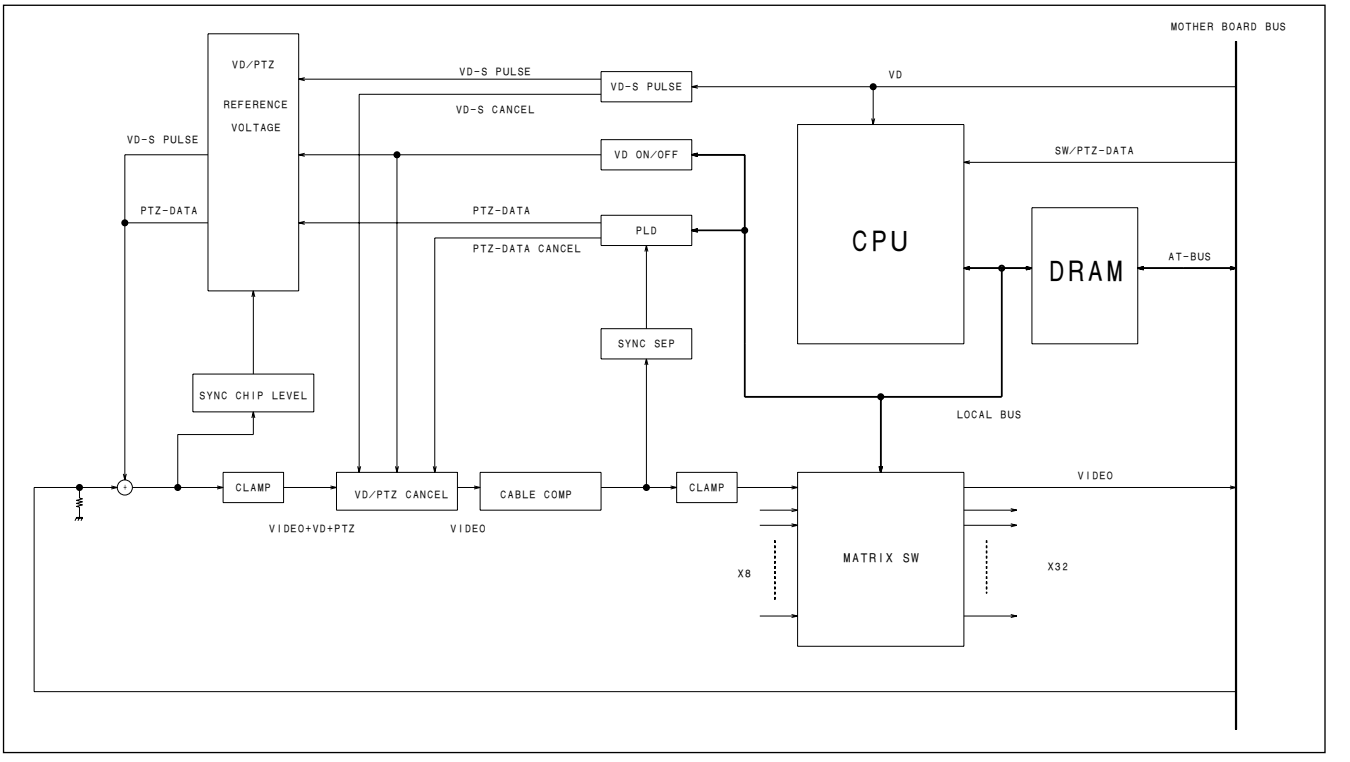


Input Board (IPM-77)

Operation

- Installed in the CPS-5000E, the board provides the following functions:
  ① To send multiple sync signals (VD-S),
  ② To send PTZ (panning, tilting, lens) control data,
  ③ To compensate for cable losses
  ④ To function as matrix switch
- The input video signals from CN13 are terminated by R103 (75 Ω) and forwarded to add to the VD-S pulse and the PTZ control data at the blanking periods. The height of those pulse and data is adjusted in two steps by the IC HC4052 (IC109), depending upon cable length.
- The video signals, combined with the VD-S pulse and the PTZ control data, are sent through an emitter-follower circuit to the IC ADG512 (IC108), where IC108 restores the combined signals into the video signals at an original signal level. The video signals are then compensated for loss due to the cable and forwarded to the sync separator and the clamp circuit simultaneously.
- In the sync separator circuit, the VD, HD, and C. Sync signals are extracted from the video signals and sent to the PLD (IC32), where IC32 synchronizes them with the PTZ control data.
- In the clamp circuit, the video signals are forwarded to the IC MAX465 (IC76-IC79), where their output level is adjusted to the specified level, and further sent to CN13.

INPUT BOARD (IPM-77)



Output Board (OPM-11)

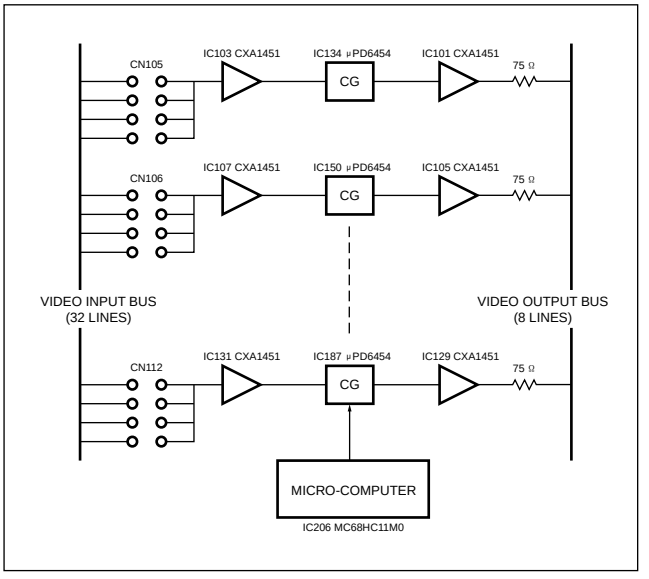
Operation

- Installed in the CPS-5000E, the board provides the video output signals.
- The board consists of analog and digital signal circuits.

① Analog signal circuit

The analog signal circuit receives at the buffer circuit the video signals from the mother board and sends them to the input of the character generator, where the video signals are combined with character signals. The combined signals are forwarded to the output line of the mother board through the video driver. The output board has eight video signal circuits, for which eight signals are chosen by CN105 through CN112 out of 32 signals available from the mother board.

OUTPUT BOARD (OPM-11)



② Digital signal circuit

Micro-computer MC68HC11M0CFU4 (IC113) provides the following functions:

(1) Command reception by the dual-port RAM MB8421 (IC194)

To turn on or off character-generator display, according to commands received.

(2) Data reception for controlling the character-generator

To receive display data from the motherboard, distribute them to each channel, and control character-generator display.

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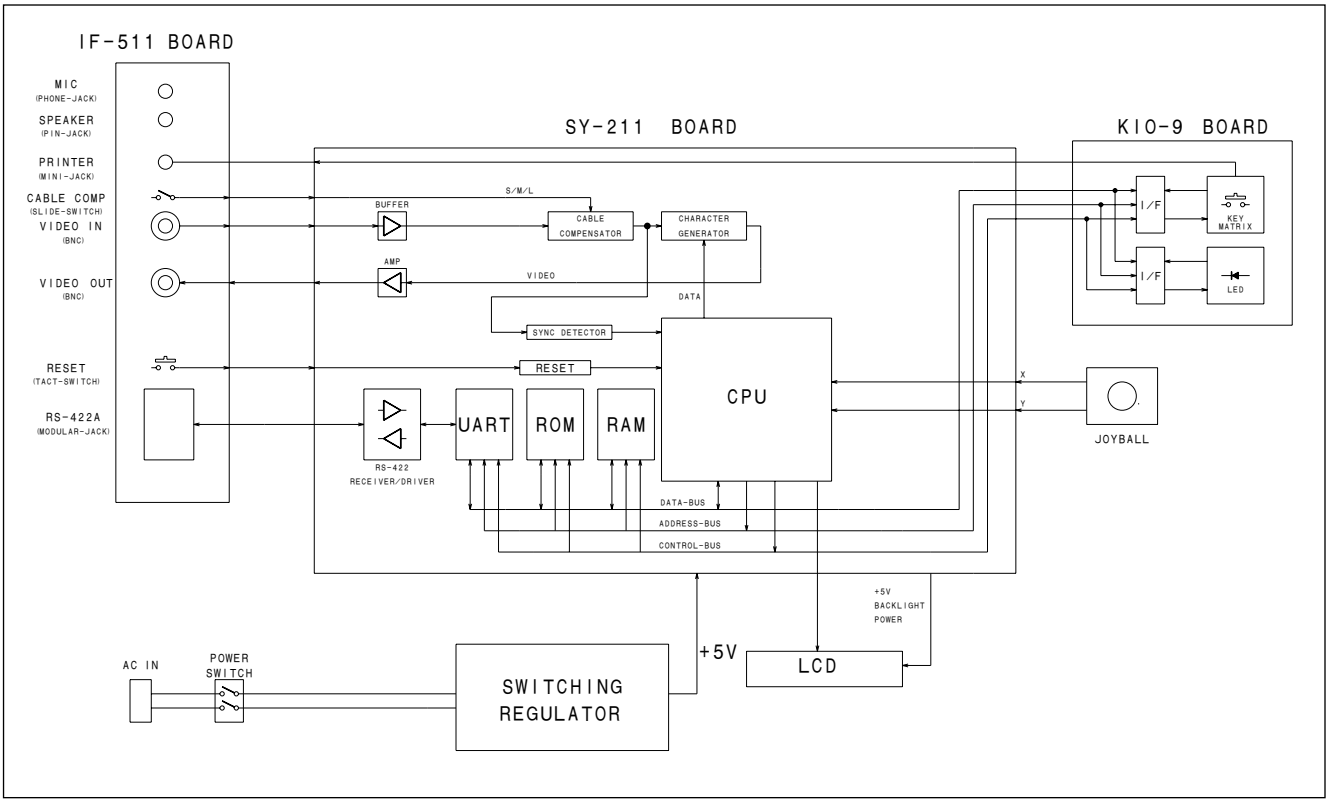
SYSTEM KEYBOARD MODEL CSPK-5000E



SYSTEM KEYBOARD MODEL CSPK-5000E

Structure

System keyboard, model CSPK-5000E consists of the following:
Control Board (SY-211)
Key Matrix Board (KIO-9)
Connector Board (IF-511)
JOYBALL Section
LCD Module Section (LM40X21B)

Circuit Description

Control Board (SY-211)

- The board consists of analog and digital signal circuits.

[Analog signal circuit]

- The DC component of video signals from CN102 are removed by C103 and forwarded to the subsequent cable compensation circuit, where IC105's gain and frequency-characteristics are adjusted in three steps, S/M/L, by the switching signals sent from CN103 and set according to coaxial cables (type/length) being in use. After the cable compensation circuit, the video signals go to the character-generator circuit. In the character-generator circuit, the on-screen-display IC (IC103) adds characters to the video signals and sends them to the IF-511 board through CN102. The micro-computer (IC101) controls IC103. The sync detector signal available from IC103's pin #13 is integrated by CR network that follows and is forwarded to the micro-computer. The micro-computer then reads the signal and determines whether the video signal is existent (low level) or non-existent (high level) and switches the circuit automatically to the external video signal mode or the internal video signal mode (with blue background).

[Digital signal circuit]

- The output voltage of the JOYBALL is led to CN104. The X-component of the output voltage is then fed to the Port E bit0 and the Y-component to the Port E bit1 of the micro-computer, where the component data are A/D converted. The converted data are then fed into the IF-511 board through the UART (IC111), the line driver/receiver IC (IC112), and CN103 as operating data for PAN/TILTER. The micro-computer continuously controls the key scan circuit of the KIO-9 board. Once the key is depressed, the key data are fed to the micro-computer through CN104. The micro-computer sends data to the LCD module and the on-screen-display IC (IC103), according to the data received. The data from the controller is, on the other hand, sent to the micro-computer through CN103, the line driver/receiver IC (IC112), and the UART (IC111). The micro-computer sends data to the LCD module and the on-screen-display IC (IC103), according to the data received.

Key Matrix Board (KIO-9)

- The board consists of the key scan circuit 8255A (IC301) and the LED drive circuit.

[Key scan circuit]

- IC301 sends the scan data consecutively from the Port B according to the input data from CN301. The data of the depressed key are led to the Port A. The switches, SW301 - SW349, form a matrix circuit, and according to the data given from the Port A and Port B the circuit determines which switch is depressed.

[LED drive circuit]

- The buffer IC (IC302) drives LED's. With the Port set in "LOW" mode, the LED illuminates.
  The Port setting of the 8255A (IC301) is as follows:
  PA0 - PA7: Key scan input
  PB0 - PB5: Key scan output
  PC0, PC1: LED drive output

Connector Board (IF-511)

- The board consists of the key board and the connectors for connection with external equipment.
- The input video signals from CN203 are terminated by a 75 Ω impedance and sent to the SY-211 board through CN202. The output video signals are, on the other hand, sent to CN204 through CN202 with the impedance of 75 Ω. The data exchange with the controller is established through CN205 (modular) and those data are sent to the SY-211 board through CN201.

JOYBALL Section

- The JOYBALL section is a joy stick type which uses a piezoelectric device. The piezoelectric device produces voltages when mechanically strained. The voltages are proportional to strains given to the device in X- and Y-directions.

LCD Module Section (LM40X21B)

- The LCD module section consists of the dot-matrix LCD panel (negative-type), the drive circuit, the controller LSI, and the LED's illuminating in yellow-green. The micro-computer controls the module.

CSP-5000E (CE)
CSPB-510VC (CE)
CSPB-520VC (CE)
CSPK-5000E (CE)
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